BEFORE THE

PUBLIC SERVICE COMMISSION

OF SOUTH CAROLINA

DOCKET NO. 2019-290-WS

In the Matter of:	)	
	)	
Application of Blue Granite Water Company for Approval to Adjust Rate Schedules and Increase Rates	)	**DIRECT TESTIMONY OF DYLAN D'ASCENDIS FOR BLUE GRANITE WATER COMPANY**
	)	

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I. INTRODUCTION

A. Witness Identification

Q. Please state your name and business address.

A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

Q. By whom are you employed and in what capacity?

A. I am a Director at ScottMadden, Inc.

B. Background and Qualifications

Q. Please summarize your professional experience and educational background.

A. I offer expert testimony on behalf of investor-owned utilities on rate of return issues and class cost of service issues. I also assist in the preparation of rate filings, including but not limited to revenue requirements and original cost and lead/lag studies. I am a graduate of the University of Pennsylvania, where I received a Bachelor of Arts degree in Economic History. I also hold a Masters of Business Administration from Rutgers University with a concentration in Finance and International Business, which was conferred with high honors. I am a Certified Rate of Return Analyst ("CRRA") and a Certified Valuation Analyst ("CVA"). My full professional qualifications are provided in Appendix A.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present evidence on behalf of Blue Granite Water Company. ("BGWC" or the "Company") about the appropriate capital structure and

corresponding cost rates the Company should be given the opportunity to earn on its jurisdictional rate base.

Q. Have you prepared an exhibit in support of your recommendation?

A. Yes. I have prepared D'Ascendis Direct Exhibit No. 1, which consists of Schedules DWD-1 through DWD-8.

Q. What is your recommended cost of capital for BGWC?

A. I recommend the Public Service Commission of South Carolina (the "Commission") authorize the Company the opportunity to earn an overall rate of return between 8.10%-8.36% based on a test year ending June 30, 2019. The ratemaking capital structure consists of 47.09% long-term debt at an embedded debt cost rate of 5.73%, and 52.91% common equity at my recommended range of common equity cost rates between 10.20% and 10.70%. The overall rate of return is summarized on page 1 of Schedule DWD-1 and in Table 1 below:

Table 1: Summary of Overall Rate of Return

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	47.09%	5.73%	2.70%
Common Equity	52.91%	10.20-10.70%	5.40%-5.66%
Total	100.00%		8.10%-8.36%

III. SUMMARY

Q. Please summarize your recommended range of common equity cost rates.

A. My recommended range of common equity cost rates is between 10.20% and 10.70%, and is summarized on page 2 of Schedule DWD-1. I have assessed the market-based common

equity cost rates of companies of relatively similar, but not necessarily identical, risk to BGWC. Using companies of relatively comparable risk as proxies is consistent with the principles of fair rate of return established in the *Hope*[1] and *Bluefield*[2] cases. No proxy group can be identical in risk to any single company, so there must be an evaluation of relative risk between the company and the proxy group to see if it is appropriate to make adjustments to the proxy group's indicated rate of return.

My recommendation results from the application of several cost of common equity models, specifically the Discounted Cash Flow ("DCF") model, the Risk Premium Model ("RPM"), and the Capital Asset Pricing Model ("CAPM"), to the market data of a proxy group of six water companies ("Utility Proxy Group") whose selection criteria will be discussed below. In addition, I also applied the DCF, RPM, and CAPM to a proxy group of domestic, non-price regulated companies comparable in total risk to the six water companies ("Non-Price Regulated Proxy Group").

The results derived from each are as follows:

[1] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).
[2] *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922).

Table 2: Summary of Common Equity Cost Rate

	Utility Proxy Group
Discounted Cash Flow Model	9.03%
Risk Premium Model	10.39
Capital Asset Pricing Model	9.91
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Companies	11.57
Indicated Common Equity Cost Rate Before Adjustment	10.20%
Business Risk Adjustment	0.50
Recommended Common Equity Cost Rate After Adjustment	10.70%
Recommended Range of Common Equity Cost Rates	10.20-10.70%

After analyzing the indicated common equity cost rates derived through these models, I conclude that a common equity cost rate of 10.20% for the Company is indicated before any Company-specific adjustments. The indicated common equity cost rate was then adjusted upward by 0.50% to reflect BGWC's higher relative business risk as compared with the members of the Utility Proxy Group, resulting in a business risk-adjusted indicated common equity cost rate of 10.70%. The unadjusted common equity cost rate based on the Utility Proxy Group of 10.20% and the business risk adjusted common equity cost rate of 10.70% applicable to BGWC form the basis of my recommended range of common equity cost rates between 10.20% and 10.70%.

IV. GENERAL PRINCIPLES

Q. What general principles have you considered in arriving at your recommended range of common equity cost rates between 10.20% and 10.70%?

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, regulation must act as a substitute for marketplace competition. Assuring that the utility can fulfill its obligations to the public, while providing safe and reliable service at all times, requires a level of earnings sufficient to maintain the integrity of presently invested capital. Sufficient earnings also permit the attraction of needed new capital at a reasonable cost, for which the utility must compete with other firms of comparable risk, consistent with the fair rate of return standards established by the U.S. Supreme Court in the previously cited *Hope* and *Bluefield* decisions. Consequently, marketplace data must be relied on in assessing a common equity cost rate appropriate for ratemaking purposes. Just as the use of the market data for the proxy group adds reliability to the informed expert's judgment used in arriving at a recommended common equity cost rate, the use of multiple generally accepted common equity cost rate models also adds reliability and accuracy when arriving at a recommended common equity cost rate.

A. Business Risk

Q. Please define business risk and explain why it is important to the determination of a fair rate of return.

A. Business risk is the riskiness of a company's common stock without the use of debt and/or preferred capital. Examples of such general business risks faced by all utilities (*i.e.*, electric, natural gas distribution, and water) include size, the quality of management, the

regulatory environment in which utilities operate, customer mix and concentration of customers, service territory growth, and capital intensity. All of these have a direct bearing on earnings.

Consistent with the basic financial principle of risk and return, business risk is important to the determination of a fair rate of return, because the higher the level of risk, the higher the rate of return investors demand.

Q. What business risks do the water and wastewater industries face in general?

A. Water and wastewater utilities have an ever-increasing responsibility to be stewards of the environment from which water supplies are drawn in order to preserve and protect essential natural resources of the United States. This increased environmental stewardship is a direct result of compliance with the Safe Water Drinking Act and response to continuous monitoring by the Environmental Protection Agency ("EPA") as well as state and local governments of the water supply for potential contaminants and their resultant regulations. This, plus aging infrastructure, necessitate additional capital investment in the distribution and treatment of water, exacerbating the pressure on free cash flows arising from increased capital expenditures for infrastructure repair and replacement. The significant amount of capital investment and, hence, high capital intensity, is a major risk factor for the water and wastewater utility industry.

Value Line Investment Survey ("*Value Line*") observes the following about the water utility industry:

> In any case, just about every water company is involved in a substantial construction program. For decades, investment in upgrading older assets here was insufficient. Hence, just about all members of this segment are now playing catchup. Fortunately, regulators realize that water customers' bills were too low (relative

> to other utilities) to cover all of the rebuilding costs. The relationship between regulators and water companies has been, for the most part, very constructive. This has resulted in more funds being used for capital projects. Indeed, replacing all of these aging pipelines may cost more than $1 trillion dollars over the next 25 years. According to the American Society of Civil Engineers, most of the pipe laid in the U.S. was done so in the early to mid-20th century. That would make most pipes being between 75 and 100 years old.
>
> Consolidation is another major trend that is underway. Large utilities, such as *American Water Works*, have been very active on the acquisition front. Since many utilities are small, their operations are very inefficient. They also lack the capital required to fund construction programs to upgrade and modernize their existing pipelines and wastewater facilities. So far, mergers have worked out well for both parties. The bigger company can eliminate a large amount of redundancies and reduce costs significantly. This increases the size of their rate bases, which is what regulators allow them to earn a return on. The end result is that small water districts are seeing more investment and the level of service has improved. At the same time, thanks to fair regulatory treatment, water utilities are able to be profitable. [3] (emphasis in original)

The water and wastewater industry also experience low depreciation rates. Depreciation rates are one of the principal sources of internal cash flows for all utilities (through a utility's depreciation expense), and are vital for a company to fund ongoing replacements and repairs of water and wastewater systems. Water / wastewater utility assets have long lives, and therefore have long capital recovery periods. As such, they face greater risk due to inflation, which results in a higher replacement cost per dollar of net plant.

Substantial capital expenditures, as noted by *Value Line,* will require significant financing. The three sources of financing typically used are debt, equity (common and

[3] *Value Line Investment Survey*, July 12, 2019.

preferred), and cash flow. All three are intricately linked to the opportunity to earn a sufficient rate of return as well as the ability to achieve that return. Consistent with *Hope* and *Bluefield*, the return must be sufficient to maintain credit quality as well as enable the attraction of necessary new capital, be it debt or equity capital.

Q. What happens if the utility is unable to attract sufficient capital?

A. If unable to raise debt or equity capital, the utility must turn to either retained earnings or free cash flow,[4] both of which are directly linked to earning a sufficient rate of return. The level of free cash flow represents a utility's ability to meet the needs of its debt and equity holders. If either retained earnings or free cash flow is inadequate, it will be nearly impossible for the utility to attract the needed capital for new infrastructure investment necessary to ensure quality service to its customers. An insufficient rate of return can be financially devastating for utilities as well as a public safety issue for their customers.

Depriving a utility of the opportunity to receive adequate earnings will impair its ability to attract and secure capital, which can further impair the ability of the utility to perform necessary maintenance, invest in aging infrastructure, and ultimately to provide safe and reliable service at least cost. Such a scenario can lead to divestment or withdrawal from the sector in a particular jurisdiction, or even bankruptcy, the results of which would be dramatic for customers, who depend upon ongoing reliable service. Bonbright, Danielsen, and Kamerschen state:

> A company that cannot meet its costs of capital, including its fixed charges and reasonable dividend requirements, cannot long continue to supply adequate public utility service to a growing community – not, at least, without violating expressed or implied commitments that it has already made in order to secure capital for the construction of its existing plant. In an extreme case, to be sure, failure to cover existing costs of capital could

[4] Free Cash Flow = Operating Cash Flow (Funds From Operations) minus Capital Expenditures.

be ultimately resolved by a drastic financial reorganization, but not without considerable cost and pain.[5]

The water and wastewater utility industry's high degree of capital intensity and low depreciation rates, coupled with the need for substantial infrastructure capital spending, require regulatory support in the form of adequate and timely rate relief, particularly a sufficient authorized return on common equity, so that the industry can successfully meet the challenges it faces.

B. Financial Risk

Q. Please define financial risk and explain why it is important to the determination of a fair rate of return.

A. Financial risk is the additional risk created by the introduction of debt and preferred stock into the capital structure. The higher the proportion of debt and preferred stock in the capital structure, the higher the financial risk (*i.e.* likelihood of default). Therefore, consistent with the basic financial principle of risk and return, investors demand a higher common equity return as compensation for bearing higher default risk.

Q. Can bond and credit ratings be a proxy for the combined business and financial risk (*i.e.*, investment risk of an enterprise)?

A. Yes, similar bond ratings/issuer credit ratings reflect, and are representative of, similar combined business and financial risks (*i.e.*, total risk) faced by bond investors.[6] Although specific business or financial risks may differ between companies, the same bond/credit

[5] Bonbright, James C., Danielsen, Albert, L., and Kamershen, David R., Principles of Public Utility Rates, 2nd Edition, 1988, at 306.

[6] Risk distinctions within S&P's bond rating categories are recognized by a plus or minus, i.e., within the A category, an S&P rating can be at A+, A, or A-. Similarly, risk distinctions for Moody's ratings are distinguished by numerical rating gradations, i.e., within the A category, a Moody's rating can be A1, A2 and A3.

rating indicates that the combined risks are roughly similar, albeit not necessarily equal, as the purpose of the bond/credit rating process is to assess credit quality or credit risk and not common equity risk.

Q. That being said, do rating agencies reflect company size in their bond ratings?

A. No. Neither S&P nor Moody's have minimum company size requirements for any given rating level. This means, all else equal, a relative size analysis needs to be conducted for companies with similar bond ratings.

V. CAPITAL STRUCTURE

Q. What capital structure ratios do you recommend be employed in developing an overall fair rate of return appropriate for the Company?

A. I recommend the use of a ratemaking capital structure consisting of 47.09% long-term debt and 52.91% common equity as shown on page 1 of Schedule DWD-1. This capital structure is based on a test year capital structure for BGWC's parent company, Corix Regulated Utilities, Inc. ("CRU"), ending June 30, 2019.

Q. How does your proposed ratemaking common equity ratio of 52.91% for BGWC compare with the total equity ratios maintained by the companies in your Utility Proxy Group?

A. My proposed ratemaking common equity ratio of 52.91% for BGWC is reasonable and consistent with the range of common equity ratios maintained, on average, by the companies in the Utility Proxy Group on which I base my recommended common equity cost rate. As shown on page 2 of Schedule DWD-2, the common equity ratios of the Utility Proxy Group range from 43.40% to 63.46%, with a midpoint of 53.43% and an average of

54.75% in 2018. The equity ratio, on average, maintained by the Utility Proxy Group is higher than the equity ratio requested by the Company.

In my opinion, a capital structure consisting of 47.09% long-term debt and 52.91% common equity is appropriate for ratemaking purposes for BGWC in the current proceeding because it is comparable, but conservative, to the average capital structure ratios (based on total permanent capital) maintained by the water companies in the Utility Proxy Group on whose market data I base my recommended common equity cost rate.

Q. What cost rate for long-term debt is most appropriate for use in a cost of capital determination for BGWC?

A. A long-term debt cost rate of 5.73% is reasonable and appropriate as it is based on a test year of CRU's long-term debt outstanding ending June 30, 2019.

VI. BGWC AND THE UTILITY PROXY GROUP

Q. Are you familiar with the operations of BGWC?

A. Yes. BGWC has approximately 26,400 customers in 16 counties: Lexington, Richland, Sumpter, Aiken, Saluda, Orangeburg, Greenwood, and Williamsburg. The Company operates 105 water systems and 28 sewer systems. BGWC is an operating subsidiary of CRU, which is a wholly-owned subsidiary of Corix Infrastructure, Inc ("CII"). BGWC's common stock is not publicly-traded.

Q. Please explain how you chose your proxy group of six water companies.

A. The basis of selection for the Utility Proxy Group was to select those companies which meet the following criteria:

(i) They are included in the Water Utility Group of *Value Line's Standard or Small and Midcap Editions* (July 12, 2019);

(ii) They have 70% or greater of 2018 total operating income and 70% or greater of 2018 total assets attributable to regulated water operations;

(iii) At the time of preparation of this testimony, they had not publicly announced that they were involved in any major merger or acquisition activity (*i.e.,* one publicly traded utility merging with or acquiring another);

(iv) They have not cut or omitted their common dividends during the five years ending 2018 or through the time of the preparation of this testimony;

(v) They have *Value Line* and Bloomberg adjusted betas;

(vi) They have a positive *Value Line* five-year dividends per share ("DPS") growth rate projection; and

(vii) They have *Value Line*, Reuters, Zacks, or Yahoo! Finance consensus five-year earnings per share ("EPS") growth rate projections.

The following six companies met these criteria: American States Water Co., American Water Works Co., Inc., Artesian Resources, Inc., California Water Service Group, Middlesex Water Co., and York Water Co.

Q. Please describe schedule DWD-2, page 1.

A. Page 1 of Schedule DWD-2 contains comparative capitalization and financial statistics for the six water companies identified above for the years 2014 to 2018.

During the five-year period ending 2018, the historically achieved average earnings rate on book common equity for the group averaged 10.17%. The average common equity

ratio based on total permanent capital (excluding short-term debt) was 55.57%, and the average dividend payout ratio was 60.28%.

Total debt to earnings before interest, taxes, depreciation, and amortization ("EBITDA") for the years 2014 to 2018 ranges between 3.42 and 3.98, with an average of 3.56. Funds from operations to total debt range from 23.84% to 26.23%, with an average of 25.11%.

VII. COMMON EQUITY COST RATE MODELS

Q. Are your cost of common equity models market-based models?

A. Yes. The DCF model is market-based because market prices are used in developing the dividend yield component of the model. The RPM is market-based because the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment of bond/credit risk. In addition, the use of beta coefficients (β) to determine the equity risk premium reflects the market's assessment of market/systematic risk, since beta coefficients are derived from regression analyses of market prices. The Predictive Risk Premium Model ("PRPM") uses monthly market returns in addition to expectations of the risk-free rate. The CAPM is market-based for many of the same reasons that the RPM is market-based (*i.e.*, the use of expected bond yields and beta coefficients). Selection of the comparable risk non-price regulated companies is market-based because it is based on statistics which result from regression analyses of market prices and reflect the market's assessment of total risk.

A. Discounted Cash Flow Model

Q. What is the theoretical basis of the DCF model?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate, which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate, *i.e.*, the total common equity return rate expected by investors.

Q. Which version of the DCF model do you use?

A. I use the single-stage constant growth DCF model.

Q. Please describe the dividend yield you used in your application of the DCF model.

A. The unadjusted dividend yields are based on the proxy companies' dividends as of July 31, 2019, divided by the average of closing market prices for the 60 trading days ending July 31, 2019.[7]

Q. Please explain your adjustment to the dividend yield.

A. Because dividends are paid periodically (quarterly), as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

[7] See Schedule DWD-3, page 1, Column 1.

DCF theory calls for the use of the full growth rate, or D_1, in calculating the dividend yield component of the model. Since the various companies in the Utility Proxy Group increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, or $D_{1/2}$. Because the dividend should be representative of the next twelve-month period, my adjustment is a conservative approach that does not overstate the dividend yield. Therefore, the actual average dividend yields in Column 1 on page 1 of Schedule DWD-3 have been adjusted upward to reflect one-half the average projected growth rate shown in Column 6.

Q. Please explain the basis of the growth rates you apply to the Utility Proxy Group in your DCF model.

A. Investors with more limited resources than institutional investors are likely to rely on widely available financial information services, such as *Value Line*, Reuters, Zacks, and Yahoo! Finance. Investors realize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as companies' abilities to effectively manage the effects of changing laws and regulations, and ever-changing economic and market conditions. For these reasons, I use analysts' five-year forecasts of EPS growth in my DCF analysis.

Over the long run, there can be no growth in DPS without growth in EPS. Security analysts' earnings expectations have a more significant influence on market prices than dividend expectations. Thus, the use of earnings growth rates in a DCF analysis provides a better match between investors' market price appreciation expectations and the growth rate component of the DCF.

Q. Please summarize the DCF model results.

A. As shown on page 1 of Schedule DWD-3, the mean result of the application of the single-stage DCF model is 8.93%, the median result is 9.13%, and the average of the two is 9.03% for the Utility Proxy Group. In arriving at a conclusion for the DCF-indicated common equity cost rate for the Utility Proxy Group, I have relied on an average of the mean and the median results of the DCF. This approach takes into consideration all the proxy companies' results, while mitigating the high and low outliers of those individual results.

B. The Risk Premium Model

Q. Please describe the theoretical basis of the RPM.

A. The RPM is based on the fundamental financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are behind debt holders in any claim on a company's assets and earnings. As a result, investors require higher returns from common stocks than from investment in bonds, to compensate them for bearing the additional risk.

While it is possible to directly observe bond returns and yields, investor required common equity return cannot be directly determined or observed. According to RPM theory, one can estimate a common equity risk premium over bonds (either historically or prospectively), and use that premium to derive a cost rate of common equity. The cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium over that cost rate to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings in the event of a liquidation.

Q. Please explain how you derived your indicated cost of common equity based on the RPM.

A. I relied on the results of the application of two risk premium methods. The first method is the PRPM, while the second method is a risk premium model using a total market approach.

Q. Please explain the PRPM.

A. The PRPM, published in the *Journal of Regulatory Economics,*[8] was developed from the work of Robert F. Engle, who shared the Nobel Prize in Economics in 2003 "for methods of analyzing economic time series with time-varying volatility ("ARCH")".[9] Engle found that volatility changes over time and is related from one period to the next, especially in financial markets. Engle discovered that the volatility in prices and returns clusters over time and is therefore highly predictable and can be used to predict future levels of risk and risk premiums.

The PRPM estimates the risk / return relationship directly, as the predicted equity risk premium is generated by the prediction of volatility or risk. The PRPM is not based on an estimate of investor behavior, but rather on the evaluation of the results of that behavior (*i.e.*, the variance of historical equity risk premiums).

The inputs to the model are the historical returns on the common shares of each company in the Utility Proxy Group minus the historical monthly yield on long-term U.S. Treasury securities through July 2019. Using a generalized form of ARCH, known as GARCH, I calculated each Utility Proxy Group company's projected equity risk premium

[8] Autoregressive conditional heteroscedasticity. See "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. The Journal of Regulatory Economics (December 2011), 40:261-278.

[9] The Nobel Prize, *The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2003*, Oct. 3, 2003, *available at* https://www.nobelprize.org/prizes/economic-sciences/2003/press-release.

using Eviews© statistical software. When the GARCH Model is applied to the historical return data, it produces a predicted GARCH variance series[10] and a GARCH coefficient[11]. Multiplying the predicted monthly variance by the GARCH coefficient, then annualizing it[12] produces the predicted annual equity risk premium. I then added the forecasted 30-year U.S. Treasury Bond yield, 2.91%[13], to each company's PRPM-derived equity risk premium to arrive at an indicated cost of common equity. The 30-year Treasury yield is a consensus forecast derived from the *Blue Chip Financial Forecasts ("Blue Chip")*[14]. The mean PRPM indicated common equity cost rate for the Utility Proxy Group is 11.02%, the median is 10.91%, and the average of the two is 10.97%. Consistent with my reliance on the average of the median and mean results of the DCF, I will rely on the average of the mean and median results of the Utility Proxy Group PRPM to calculate a cost of common equity rate of 10.97%.

Q. Please explain the total market approach RPM.

A. The total market approach RPM adds a prospective public utility bond yield to an average of 1) an equity risk premium that is derived from a beta-adjusted total market equity risk premium, and 2) an equity risk premium based on the S&P Utilities Index.

[10] Illustrated on Columns 1 and 2 of page 2 of Schedule DWD-4. In this instance, I have selected the lower predicted variance in order to be conservative.
[11] Illustrated on Column 4 of page 2 of Schedule DWD-4.
[12] Annualized Return = (1+Monthly Return)^12 - 1.
[13] *See* Column 6 of page 2 of Schedule DWD-4.
[14] *Blue Chip Financial Forecasts*, June 1, 2019 at p. 14 and August 1, 2019 at p. 2.

Q. Please explain the basis of the expected bond yield of 4.35% applicable to the Utility Proxy Group.

A. The first step in the total market approach RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including common equity cost rate, are prospective in nature, a prospective yield on similarly rated long-term debt is essential. I rely on a consensus forecast of about 50 economists of the expected yield on Aaa-rated corporate bonds for the six calendar quarters ending with the third calendar quarter of 2020 and the long-term projections for 2020 to 2024, and 2025 to 2029 from Blue Chip. As shown on line No. 1 of page 3 of Schedule DWD-4, the average expected yield on Moody's Aaa-rated corporate bonds is 3.90%. In order to derive an expected yield on A2 rated-public utility bonds, I make an upward adjustment of 0.37%, which represents a recent spread between Aaa corporate bonds and A2-rated public utility bonds, in order to adjust the expected Aaa corporate bond yield to an equivalent Moody's A2-rated public utility bond.[15] Adding that recent 0.37% spread to the expected Aaa corporate bond yield of 3.90% results in an expected A2 public utility bond of 4.27%.

Since the Utility Proxy Group's average Moody's long-term issuer rating is A2/A3, another adjustment to the expected A2 public utility bond yield is needed to reflect the difference in bond ratings. An upward adjustment of 0.08%, which represents one-sixth of a recent spread between A2 and A3 public utility bond yields, is necessary to make the A2 prospective bond yield applicable to an A2/A3 public utility bond.[16] Adding the 0.08% to

[15] As shown on Line No. 2 and explained in Note 2 of page 3 of Schedule DWD-4.
[16] As shown on Line No. 4 and explained in Note 3 on page 3 of Schedule DWD-4.

the 4.27% prospective A2 public utility bond yield results in a 4.35% expected bond yield for the Utility Proxy Group.

Q. Please explain how the beta-derived equity risk premium is determined.

A. The components of the beta-derived risk premium model are 1) an expected market equity risk premium over corporate bonds, and 2) the beta coefficient. The derivation of the beta-derived equity risk premium that I apply to the Utility Proxy Group is shown on lines 1 through 9 of page 8 of Schedule DWD-4. The total beta-derived equity risk premium I apply is based on an average of: 1) Ibbotson-based equity risk premiums; 2) *Value Line*-based equity risk premiums; and a 3) Bloomberg-based equity risk premium. Each of these is described in turn.

Q. How did you derive a market equity risk premium based on long-term historical data?

A. To derive a historical market equity risk premium, I used the most recent holding period returns for the large company common stocks from the Stocks, Bonds, Bills, and Inflation ("SBBI") 2019 Yearbook ("SBBI – 2019")[17] less the average historical yield on Moody's Aaa/Aa-rated corporate bonds for the period 1928 to 2018. The use of holding period returns over a very long period of time is appropriate because it is consistent with the long-term investment horizon presumed by investing in a going concern, *i.e.*, a company expected to operate in perpetuity.

SBBI's long-term arithmetic mean monthly total return rate on large company common stocks was 11.62% and the long-term arithmetic mean monthly yield on Moody's

[17] SBBI Appendix A Tables: Morningstar Stocks, Bonds, Bills, & Inflation 1926-2018.

Aaa/Aa-rated corporate bonds was 6.08%.[18] As shown on line 1 of page 8 of Schedule DWD-4, subtracting the mean monthly bond yield from the total return on large company stocks results in a long-term historical equity risk premium of 5.54%.

I used the arithmetic mean monthly total return rates for the large company stocks and yields (income returns) for the Moody's Aaa/Aa corporate bonds, because they are appropriate for the purpose of estimating the cost of capital as noted in SBBI – 2019.[19] The use of the arithmetic mean return rates and yields is appropriate because historical total returns and equity risk premiums provide insight into the variance and standard deviation of returns needed by investors in estimating future risk when making a current investment. If investors relied on the geometric mean of historical equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, which is critical to risk analysis.

Q. Please explain the derivation of the regression-based market equity risk premium.

A. To derive the regression analysis-derived market equity risk premium of 8.35%, shown on line 2 of page 8 of Schedule DWD-4, I used the same monthly annualized total returns on large company common stocks relative to the monthly annualized yields on Moody's Aaa/Aa corporate bonds as mentioned above. The relationship between interest rates and the market equity risk premium was modeled using the observed monthly market equity risk premium as the dependent variable, and the monthly yield on Moody's Aaa/Aa corporate bonds as the independent variable. I used a linear Ordinary Least Squares

[18] As explained in Note 1 on page 9 of Schedule DWD-4.
[19] SBBI – 2019, at 10-22.

("OLS") regression, in which the market equity risk premium is expressed as a function of the Moody's Aaa/Aa corporate bonds yield:

$$RP = \alpha + \beta\ (R_{Aaa/Aa})$$

Q. Please explain the derivation of a PRPM equity risk premium.

A. I used the same PRPM approach described previously to develop another equity risk premium estimate. The inputs to the model are the historical monthly returns on large company common stocks minus the monthly yields on Aaa/Aa corporate bonds during the period from January 1928 through July 2019.[20] Using the previously discussed generalized form of ARCH, known as GARCH, the projected equity risk premium is determined using Eviews© statistical software. The resulting PRPM predicted market equity risk premium is 9.05%.[21]

Q. Please explain the derivation of a projected equity risk premium based on *Value Line* data for your RPM analysis.

A. As noted previously, because both ratemaking and the cost of capital are prospective, a prospective market equity risk premium is needed. The derivation of the forecasted or prospective market equity risk premium can be found in Note 4 on page 8 of Schedule DWD-4. Consistent with my calculation of the dividend yield component in my DCF analysis, this prospective market equity risk premium is derived from an average of the three- to five-year median market price appreciation potential by *Value Line* for the thirteen

[20] Data from January 1926-December 2018 is from SBBI – 2019. Data from January – July 2019 is from Bloomberg Professional Services.

[21] Shown on Line No. 3 on page 8 of Schedule DWD-4.

weeks ending August 2, 2019, plus an average of the median estimated dividend yield for the common stocks of the 1,700 firms covered in *Value Line*'s Standard Edition.[22]

The average median expected price appreciation is 54%, which translates to an 11.40% annual appreciation, and, when added to the average of *Value Line's* median expected dividend yields of 2.23%, equates to a forecasted annual total return rate on the market of 13.63%. The forecasted Aaa bond yield of 3.90% is deducted from the total market return of 13.63%, resulting in an equity risk premium of 9.73%, shown on page 8, line 4 of Schedule DWD-4.

Q. Please explain the derivation of an equity risk premium based on the S&P 500 companies.

A. Using data from *Value Line*, I calculate an expected total return on the S&P 500 using expected dividend yields and long-term growth estimates as a proxy for capital appreciation. The expected total return for the S&P 500 is 14.52%. Subtracting the prospective yield on Aaa Corporate bonds of 3.90% results in an 10.62% projected equity risk premium.

Q. Please explain the derivation of an equity risk premium based on Bloomberg data.

A. Using data from Bloomberg Professional Services, I calculate an expected total return on the S&P 500 using expected dividend yields and long-term growth estimates as a proxy for capital appreciation, identical to the method described above. The expected total return for the S&P 500 is 14.38%. Subtracting the prospective yield on Aaa Corporate bonds of 3.90% results in a 10.48% projected equity risk premium.

[22] As explained in detail in page 2, Note 1 of Schedule DWD-5.

Q. What is your conclusion of a beta-derived equity risk premium for use in your RPM analysis?

A. I give equal weight to the six equity risk premiums in arriving at my conclusion of 8.96%.[23]

After calculating the average market equity risk premium of 8.96%, I adjust it by beta to account for the risk of the Utility Proxy Group. As discussed below, the beta coefficient is a meaningful measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a company's, or proxy group's, share of the market's total equity risk premium relative to corporate bond yields. As shown on page 1 of Schedule DWD-5, the average of the mean and median beta coefficient for the Utility Proxy Group is 0.66. Multiplying the beta coefficient of the Utility Proxy Group of 0.66 by the market equity risk premium of 8.96% results in a beta-adjusted equity risk premium of 5.91% for the Utility Proxy Group.

Q. How did you derive the equity risk premium based on the S&P Utility Index and Moody's A-rated public utility bonds?

A. I estimated three equity risk premiums based on S&P Utility Index holding returns, and two equity risk premiums based on the expected returns of the S&P Utilities Index, using *Value Line* and Bloomberg data, respectively. Turning first to the S&P Utility Index holding period returns, I derived a long-term monthly arithmetic mean equity risk premium between the S&P Utility Index total returns of 10.56% and monthly A-rated public utility bond yields of 6.56% from 1928 to 2018 to arrive at an equity risk premium of 4.00%.[24] I then used the same historical data to derive an equity risk premium of 6.04% based on a

[23] See Line No. 7 on page 8 of Schedule DWD-4.
[24] As shown on Line No. 1 on page 12 of Schedule DWD-4.

regression of the monthly equity risk premiums. The final S&P Utility Index holding period equity risk premium involved applying the PRPM using the historical monthly equity risk premiums from January 1928 to July 2019 to arrive at a PRPM-derived equity risk premium of 3.77% for the S&P Utility Index.

I then derived expected total returns on the S&P Utilities Index of 10.51% and 9.10% using data from *Value Line* and Bloomberg Professional Services, respectively, and subtracted the prospective A2-rated public utility bond yield (4.27%[25]), which results in risk premiums of 6.24% and 4.83%, respectively. As with the market equity risk premiums, I averaged each risk premium to arrive at my utility-specific equity risk premium of 4.98%.

Q. What is your conclusion of an equity risk premium for use in your total market approach RPM analysis?

A. The equity risk premium I applied to the Utility Proxy Group is 5.45%, which is the average of the beta-derived and the S&P utility equity risk premiums of 5.91% and 4.98%, respectively.[26]

Q. What is the indicated RPM common equity cost rate based on the total market approach?

A. As shown on line No. 7 of Schedule DWD-4, page 3, I calculate a common equity cost rate of 9.80% for the Utility Proxy Group based on the total market approach of the RPM.

[25] Derived on Line No. 3 of page 3 of Schedule DWD-4.
[26] As shown on page 7 of Schedule DWD-4.

Q. What are the results of your application of the PRPM and the total market approach RPM?

A. As shown on page 1 of Schedule DWD-4, the indicated RPM-derived common equity cost rate is 10.39%, which gives equal weight to the PRPM (10.97%) and the adjusted market approach results (9.80%).

C. The Capital Asset Pricing Model

Q. Please explain the theoretical basis of the CAPM.

A. CAPM theory defines risk as the co-variability of a security's returns with the market's returns as measured by the beta coefficient (β). A beta coefficient less than 1.0 indicates lower variability than the market as a whole, while a beta coefficient greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk (*i.e.*, all non-market or unsystematic risk) can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. In addition, the CAPM presumes that investors require compensation only for systematic risk, which is the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market as measured by the beta coefficient. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where: R_s = Return rate on the common stock

R_f = Risk-free rate of return

R_m = Return rate on the market as a whole

β = Adjusted beta coefficient (volatility of the security relative to the market as a whole)

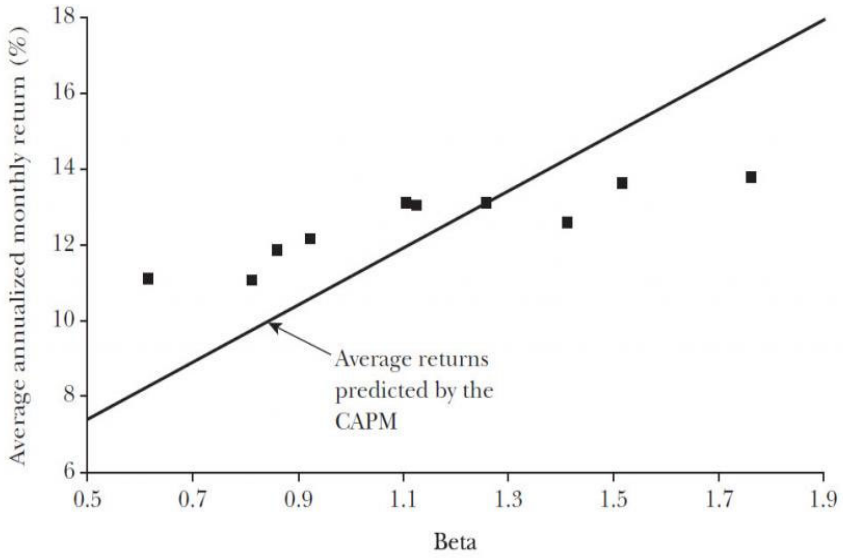
Numerous tests of the CAPM have measured the extent to which security returns and beta coefficients are related as predicted by the CAPM, confirming its validity. The empirical CAPM ("ECAPM") reflects the reality that while the results of these tests support the notion that the beta coefficient is related to security returns, the empirical Security Market Line ("SML") described by the CAPM formula is not as steeply sloped as the predicted SML.[27] The ECAPM reflects this empirical reality. Fama and French clearly state regarding Figure 2, below, that "[t]he returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low." [28]

[27] Roger A. Morin, New Regulatory Finance (Public Utility Reports, Inc., 2006), at p. 175.

[28] Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence", *Journal of Economic Perspectives*, Vol. 18, No. 3, Summer 2004 at 33 "Fama & French".

Figure 2 http://pubs.aeaweb.org/doi/pdfplus/10.1257/0895330042162430

Average Annualized Monthly Return versus Beta for Value Weight Portfolios Formed on Prior Beta, 1928–2003



In addition, Morin observes that while the results of these tests support the notion that beta is related to security returns, the empirical SML described by the CAPM formula is not as steeply sloped as the predicted SML. Morin states:

> With few exceptions, the empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.[29]
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship [is] Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$[30]

[29] Morin, at 175.
[30] Morin, at 190.

Fama and French provide similar support for the ECAPM when they state:

> The early tests firmly reject the Sharpe-Lintner version of the CAPM. There is a positive relation between beta and average return, but it is too 'flat.'… The regressions consistently find that the intercept is greater than the average risk-free rate… and the coefficient on beta is less than the average excess market return… This is true in the early tests… as well as in more recent cross-section regressions tests, like Fama and French (1992).[31]

Finally, Fama and French further note:

> Confirming earlier evidence, the relation between beta and average return for the ten portfolios is much flatter than the Sharpe-Linter CAPM predicts. The returns on low beta portfolios are too high, and the returns on the high beta portfolios are too low. For example, the predicted return on the portfolio with the lowest beta is 8.3 percent per year; the actual return as 11.1 percent. The predicted return on the portfolio with the t beta is 16.8 percent per year; the actual is 13.7 percent.[32]

Clearly, the justification from Morin, Fama, and French along with their reviews of other academic research on the CAPM, validate the use of the ECAPM. In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the Utility Proxy Group and averaged the results.

Q. What beta coefficients did you use in your CAPM analysis?

A. With respect to the beta coefficient, I considered two methods of calculation: the average of the beta coefficients of the Utility Proxy Group companies reported by Bloomberg Professional Services and the average of the beta coefficients of the Utility Proxy Group companies as reported by *Value Line*. While both of those services adjust their calculated (or "raw") beta coefficients to reflect the tendency of the beta coefficient to regress to the

[31] Fama & French, at 32.
[32] *Ibid.,* at 33.

market mean of 1.00, *Value Line* calculates the beta coefficient over a five-year period, while Bloomberg's calculation is based on two years of data.

Q. Please describe your selection of a risk-free rate of return.

A. As shown in Column 5 on page 1 of Schedule DWD-5, the risk-free rate adopted for both applications of the CAPM is 2.91%. This risk-free rate of 2.91% is based on the average of the *Blue Chip* consensus forecast of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the fourth calendar quarter of 2020 and long-term projections for the years 2021 to 2025 and 2026 to 2030.

Q. Why is the yield on long-term U.S. Treasury Bonds appropriate for use as the risk-free rate?

A. The yield on long-term U.S. Treasury Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A-rated public utility bonds; the long-term investment horizon inherent in utilities' common stocks; and the long-term life of the jurisdictional rate base to which the allowed fair rate of return (*i.e.*, cost of capital) will be applied. In contrast, short-term U.S. Treasury yields are more volatile and largely a function of Federal Reserve monetary policy.

Q. Please explain the estimation of the expected risk premium for the market used in your CAPM analyses.

A. The basis of the market risk premium is explained in detail in Note 1 on Schedule DWD-5. As discussed previously, the market risk premium is derived from an average of:

(i) Ibbotson-based market risk premiums;

(ii) *Value Line* data-based market risk premiums; and

(iii) Bloomberg data-based market risk premium.

The long-term income return on U.S. Government Securities of 5.12% was deducted from the SBBI - 2019 monthly historical total market return of 11.89%, which results in a historical market equity risk premium of 6.77%.[33] I applied a linear OLS regression to the monthly annualized historical returns on the S&P 500 relative to historical yields on long-term U.S. Government Securities from SBBI - 2019. That regression analysis yielded a market equity risk premium of 9.42%. The PRPM market equity risk premium is 10.20%, and is derived using the PRPM relative to the yields on long-term U.S. Treasury securities from January 1926 through July 2019.

The *Value Line*-derived forecasted total market equity risk premium is derived by deducting the forecasted risk-free rate of 2.91%, discussed above, from the *Value Line* projected total annual market return of 13.63%, resulting in a forecasted total market equity risk premium of 10.72%. The S&P 500 projected market equity risk premium using *Value Line* data is derived by subtracting the projected risk-free rate of 2.91% from the projected total return of the S&P 500 of 14.52%. The resulting market equity risk premium is 11.61%.

The S&P 500 projected market equity risk premium using Bloomberg data is derived by subtracting the projected risk-free rate of 2.91% from the projected total return of the S&P 500 of 14.38%. The resulting market equity risk premium is 11.47%.

These six market risk premiums, when averaged, result in an average total market equity risk premium of 10.03%.

[33] SBBI – 2019, at Appendix A-1 (1) through .A-1 (3) and Appendix A-7 (19) through A-7 (21).

Q. What are the results of your application of the traditional and empirical CAPM to the Utility Proxy Group?

A. As shown on page 1 of Schedule DWD-5, the mean result of my CAPM/ECAPM analyses is 9.94%, the median is 9.87%, and the average of the two is 9.91%. Consistent with my reliance on the average of mean and median DCF results discussed above, the indicated common equity cost rate using the CAPM/ECAPM is 9.91%.

D. Common Equity Cost Rates for a Proxy Group of Domestic, Non-Price Regulated Companies Based on the DCF, RPM, and CAPM

Q. Why do you also consider a proxy group of domestic, non-price regulated companies?

A. In the *Hope* and *Bluefield* cases, the U.S. Supreme Court did not specify that comparable risk companies had to be utilities. Since the purpose of rate regulation is to be a substitute for the competition of the marketplace, non-price regulated firms operating in the competitive marketplace make an excellent proxy if they are comparable in total risk to the Utility Proxy Group being used to estimate the cost of common equity. The selection of such domestic, non-price-regulated competitive firms theoretically and empirically results in a proxy group which is comparable in total risk to the Utility Proxy Group.

Q. How did you select unregulated companies that are comparable in total risk to the regulated public Utility Proxy Group?

A. In order to select a proxy group of domestic, non-price regulated companies similar in total risk to the Utility Proxy Group, I relied on the beta coefficients and related statistics derived from *Value Line* regression analyses of weekly market prices over the most recent 260 weeks (*i.e.*, five years). Using these selection criteria resulted in a proxy group of eleven domestic, non-price regulated firms comparable in total risk to the Utility Proxy Group.

Total risk is the sum of non-diversifiable market risk and diversifiable company-specific risks. The criteria used in the selection of the domestic, non-price regulated firms was:

(i) They must be covered by *Value Line Investment Survey* (Standard Edition);

(ii) They must be domestic, non-price regulated companies, *i.e.*, non-utilities;

(iii) Their beta coefficients must lie within plus or minus two standard deviations of the average unadjusted beta coefficient of the Utility Proxy Group; and

(iv) The residual standard errors of the *Value Line* regressions which gave rise to the unadjusted beta coefficients must lie within plus or minus two standard deviations of the average residual standard error of the Utility Proxy Group.

Beta coefficients are a measure of market, or systematic, risk, which is not diversifiable. The residual standard errors of the regressions were used to measure each firm's company-specific, diversifiable risk. Companies that have similar beta coefficients and similar residual standard errors resulting from the same regression analyses have similar total investment risk.

Q. Have you prepared a schedule which shows the data from which you selected the eleven domestic, non-price regulated companies that are comparable in total risk to the Utility Proxy Group?

A. Yes, the basis of my selection and both proxy groups' regression statistics are shown in Schedule DWD-6.

Q. Did you calculate common equity cost rates using the DCF, RPM, and CAPM for the Non-Price Regulated Proxy Group?

A. Yes. Because the DCF, RPM, and CAPM have been applied in an identical manner as described above, I will not repeat the details of the rationale and application of each model. One exception is in the application of the RPM, where I did not use public utility-specific equity risk premiums, nor did I apply the PRPM to the individual companies.

Page 2 of Schedule DWD-7 contains the derivation of the DCF cost rates. As shown, the indicated common equity cost rate using the DCF for the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group, is 12.14%.

Pages 3 through 5 contain the data and calculations that support the 11.60% RPM cost rate. As shown on line No. 1 of page 3 of Schedule DWD-7, the consensus prospective yield on Moody's Baa rated corporate bonds for the six quarters ending in the fourth quarter of 2020, and for the years 2021 to 2025 and 2026 to 2030, is 4.90%.[34]

When the beta-adjusted risk premium of 6.90%[35] relative to the Non-Price Regulated Proxy Group is added to the prospective Baa2 rated corporate bond yield of 4.90%, the indicated RPM cost rate is 11.60%.

Page 6 contains the inputs and calculations that support my indicated CAPM/ECAPM cost rate of 10.84%.

[34] *Blue Chip Financial Forecasts*, December 1, 2018, at p. 14 and August 1, 2019, at p. 2.
[35] Derived on page 5 of Schedule DWD-7.

Q. How is the cost rate of common equity based on the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group?

A. As shown on page 1 of Schedule DWD-7, the results of the DCF, RPM, and CAPM applied to the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group are 12.14%, 11.60%, and 10.84%, respectively. The average of the mean and median of these models is 11.57%, which I use as the indicated common equity cost rate for the Non-Price Regulated Proxy Group.

VIII. CONCLUSION OF COMMON EQUITY COST RATE BEFORE ADJUSTMENT

Q. What is the indicated common equity cost rate before adjustment?

A. Based on the results of the application of multiple cost of common equity models to the Utility Proxy Group and the Non-Price Regulated Proxy Group, the indicated cost of equity before adjustment is 10.20%. I use multiple cost of common equity models as primary tools in arriving at my recommended common equity cost rate, because no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models. The use of multiple models adds reliability to the estimation of the common equity cost rate, and the prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent.

Based on these common equity cost rate results, I conclude that a common equity cost rate of 10.20% is reasonable, appropriate and indicated for the Company before any adjustment for relative risk between the Company and the Utility Proxy Group is made. The 10.20% indicated ROE is the approximate average of the mean and median results produced by my application of the models as explained above.

IX. ADJUSTMENTS TO THE COMMON EQUITY COST RATE

A. Business Risk Adjustment

Q. Please summarize the unique business risk BGWC faces relative to the Utility Proxy Group.

A. There are two types of business risk that should be considered by the Commission in determining the rate of return of common equity for BGWC; the current regulatory environment in South Carolina and BGWC's smaller size compared to the Utility Proxy Group.

Q. Is there any precedent that identifies the regulatory risk faced by utilities?

A. Yes. In *Hope*, the Supreme Court noted that it is not the theory, but the impact of the rate order which counts.[36] In *Duquesne*, the Supreme Court noted the risks to utilities of ratemaking treatment and the importance of establishing ratemaking treatment that does not continuously favor customers to the continuous detriment of investors:

> [t]he risks a utility faces are in large part defined by the rate methodology because utilities are virtually always public monopolies dealing in essential service, and so relatively immune to the usual market risks. Consequently, a State's decision to arbitrarily switch back and forth between methodologies in a way which required investors to bear the risk of bad investments at some times while denying them the benefit of good investments at others would raise serious constitutional questions.[37]

Q. How does the regulatory environment in which a utility operates affect its access to and cost of capital?

A. The regulatory environment can significantly affect a utility's access to capital and its cost of capital in several ways. First, the proportion and cost of debt capital available to utility

[36] Hope, 320 U.S., at 602, 64 S.Ct., at 288.
[37] Duquesne, 109 S.Ct. 609 (1989) at 9.

companies are influenced by the rating agencies' assessment of the regulatory environment. As noted by Moody's, "the predictability and supportiveness of the regulatory framework in which a regulated utility operates is a key credit consideration and the one that differentiates the industry from most other corporate sectors."[38] Moody's further noted that:

> For a regulated utility company, we consider the characteristics of the regulatory environment in which it operates. These include how developed the regulatory framework is; its track record for predictability and stability in terms of decision making; and the strength of the regulator's authority over utility regulatory issues. A utility operating in a stable, reliable, and highly predictable regulatory environment will be scored higher on this factor than a utility operating in a regulatory environment that exhibits a high degree of uncertainty or unpredictability. Those utilities operating in a less developed regulatory framework or one that is characterized by a high degree of political intervention in the regulatory process will receive the lowest scores on this factor.[39]

S&P also notes that regulatory commissions should eliminate, or at least greatly reduce, the issue of rate-case lag.[40] Moody's agrees that timely cost recovery is an important determinant of credit quality, stating that "[t]he ability to recover prudently incurred costs in a timely manner is perhaps the single most important credit consideration for regulated utilities, as the lack of timely recovery of such costs has caused financial stress for utilities on several occasions"[41] Similarly, Fitch Ratings ("Fitch") notes that in the current environment of rising costs, utilities will require more frequent rate increases to maintain financial results, resulting in further exposure to regulatory risks.[42]

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38 Moody's Global Infrastructure Finance, Regulated Electric and Gas Utilities, August 2009, at 6.
39 *Ibid*.
40 Standard and Poor's, Assessing Vertically Integrated Utilities' Business Risk Drivers, U.S. Utilities and Power Commentary, November 2006, at 10.
41 Moody's, Global Infrastructure Finance, Regulated Electric and Gas Utilities, August 2009, at 7.
42 FitchRatings, U.S. Utilities, Power, and Gas 2010 Outlook, December 4, 2009, at 1.

Q. How is the South Carolina regulatory environment perceived by equity investors?

A. Regulatory Research Associates ("RRA")[43] rank South Carolina as Average/3 from an investor viewpoint. Even though the South Carolina regulatory environment is seen to be average by RRA, its rating has been downgraded twice in recent years; from Average/1 to Average/2 on 10/3/2017 and Average/2 to Average/3 on 8/7/2018. The August 2018 downgrade was a result of a federal court's denial of South Carolina Electric & Gas's request for a stay of the legislatively required $367 million rate reduction. While this uncertainty surrounding the regulatory climate in South Carolina is not specific to either water utilities or to direct Commission action, the General Assembly's interference in Commission matters is concerning and should be accounted for in the investor-required return.

Q. Please explain why size has a bearing on business risk.

A. Company size is a significant element of business risk for which investors expect to be compensated through higher returns. Generally, smaller companies are less able to cope with significant events that affect sales, revenues, and earnings. For example, smaller companies face more risk exposure to business cycles and economic conditions, both nationally and locally. Additionally, the loss of revenues from a few larger customers would have a greater effect on a small company than on a much larger company with a larger, more diverse, customer base.

Further evidence of the risk effects of size include the fact that investors demand greater returns to compensate for the lack of marketability and liquidity of the securities of smaller firms. For these reasons, the Commission should authorize a cost of common

[43] RRA Regulatory Focus, South Carolina Regulatory Review, November 13, 2019.

equity in this proceeding that reflects BGWC's relevant risk, including the impact of its small size.

Q. Is there a way to quantify a relative risk adjustment due to BGWC's increased business risk relative to the Utility Proxy Group?

A. Yes. The Company has greater relative risk than the average company in the Utility Proxy Group because of its greater business risk compared with the group as discussed above. As a proxy for business risk, I have used the Duff & Phelps size deciles from its 2019 Cost of Capital Navigator as measured by an estimated market capitalization of common equity for BGWC (whose common stock is not publicly-traded).

Table 5: Size as Measured by Market Capitalization for the Company and the Utility Proxy Group

	Market Capitalization* ($ Millions)	Times Greater than the Company
BGWC	$59.825	
Utility Proxy Group	$4,663.072	20.2x

*From page 1 of Schedule DWD-8.

The Company's estimated market capitalization was at $59.825 million as of July 31, 2019, compared with the market capitalization of the average water company in the Utility Proxy Group of $4.663 billion as of July 31, 2019. The Utility Proxy Group's market capitalization is 77.9 times the size of BGWC's estimated market capitalization. As a result, it is necessary to upwardly adjust the indicated common equity cost rate of 10.20% to reflect BGWC's greater risk due to its smaller relative size. The determination is based on the size premiums for portfolios of New York Stock Exchange, American Stock Exchange, and NASDAQ listed companies ranked by deciles for the 1926 to 2018 period.

The average size premium for the Utility Proxy Group with a market capitalization of $4.663 billion falls in the 4th decile, while BGWC's market capitalization of $59.825 million places the Company in the 10th decile. The size premium spread between the 4th decile and the 10th decile is 4.37%. Even though a 4.37% upward size adjustment is indicated, I applied a business risk premium of 0.50% to BGWC's indicated common equity cost rate.

Q. Did you evaluate BGWC's parent, CRU's estimated market capitalization compared to the proxy group?

A. Yes. Even though I do not think it is applicable[44], I looked at CRU's common equity balance at June 30, 2019. I then adjusted it by the proxy group market-to-book ratio and compared it with the proxy group. CRU's estimated market capitalization, $1.044 billion[45], would fall in the 8th decile, which would indicate a 0.95% size premium over the average proxy group company.

Q. Did you evaluate other measures of relative size between BGWC and the proxy group?

A. Yes. In order to present a more robust analysis, I compared BGWC and the Utility Proxy Group using various measures of size as described by Duff and Phelps' 2019 Valuation Yearbook. The measures are listed below:

[44] It is Mr. D'Ascendis' opinion that the parent company's size is irrelevant in setting rates for one of its jurisdictional subsidiaries. Regulation is required to look at each operating utility as a stand-alone company since they can only set rates for that particular utility and no other operating subsidiary outside of their jurisdiction.

[45] $282.859M x 369.1% = $1,044.033M

- Market Value of Common Equity
- Book Value of Common Equity
- Market Value of Invested Capital
- Total Assets
- Total Sales
- Number of Employees

As shown on page 3 of Schedule DWD-8, in all measures, BGWC was determined to be smaller than the average water proxy group company with associated size premiums ranging from 1.08% to 3.04%. In view of these results, in my opinion, an upward business risk adjustment of 0.50% to the indicated cost of common equity is both appropriate and conservative.

Q. What is the indicated cost of common equity after adjustment for business risk?

A. After applying the 0.50% business risk adjustment to the indicated cost of common equity of 10.20%, a business risk-adjusted cost of common equity of 10.70% results.

X. CONCLUSION OF COMMON EQUITY COST RATE

Q. What is your recommended range of common equity cost rates for BGWC?

A. Given the indicated cost of common equity based on the Utility Proxy Group of 10.20%, and the business risk-adjusted cost of common equity of 10.70%, I conclude that an acceptable range of cost of common equity for the Company is between 10.20% and 10.70%.

Q. In your opinion, is your proposed range of cost of common equity between 10.20% and 10.70% and the Company's requested cost of common equity of 10.70% fair and

reasonable to BGWC, its shareholders, and its customers, considering the above economic conditions?

A. Yes, it is.

Q. Does this conclude your direct testimony?

A. Yes, it does.

Summary

Dylan is an experienced consultant and a Certified Rate of Return Analyst (CRRA) and Certified Valuation Analyst (CVA). He has served as a consultant for investor-owned and municipal utilities and authorities for 11 years. Dylan has extensive experience in rate of return analyses, class cost of service, rate design, and valuation for regulated public utilities. He has testified as an expert witness in the subjects of rate of return, cost of service, rate design, and valuation before 18 regulatory commissions in the U.S. and an American Arbitration Association panel.

He also maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured.

Areas of Specialization

- Regulation and Rates
- Utilities
- Mutual Fund Benchmarking
- Capital Market Risk
- Capital Market Risk
- Financial Modeling
- Valuation
- Regulatory Strategy and Rate Case Support
- Rate of Return
- Cost of Service
- Rate Design

Recent Expert Testimony Submission/Appearances

Jurisdiction	***Topic***
Illinois Commerce Commission	Cost of Service, Rate Design
New Jersey Board of Public Utilities	Cost of Service, Rate Design
Hawaii Public Utilities Commission	Cost of Service, Rate Design
South Carolina Public Service Commission	Return on Common Equity
American Arbitration Association	Valuation

Recent Assignments

- Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies
- Maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured
- Sponsored valuation testimony for a large municipal water company in front of an American Arbitration Association Board to justify the reasonability of their lease payments to the City
- Co-authored a valuation report on behalf of a large investor-owned utility company in response to a new state regulation which allowed the appraised value of acquired assets into rate base

Recent Publications and Speeches

- Co-Author of: "Decoupling Impact and Public Utility Conservation Investment", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. Energy Policy Journal, 130 (2019), 311-319.
- "Establishing Alternative Proxy Groups", before the Society of Utility and Regulatory Financial Analysts: 51st Financial Forum, April 4, 2019, New Orleans, LA.

- "Past is Prologue: Future Test Year", Presentation before the National Association of Water Companies 2017 Southeast Water Infrastructure Summit, May 2, 2017, Savannah, GA.
- Co-author of: "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Pauline M. Ahern, and Frank J. Hanley, The Electricity Journal, May, 2013.
- "Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Regulatory Commission of Alaska				
Alaska Power Company	07/16	Alaska Power Company	Docket No. TA857-2	Rate of Return
Arizona Corporation Commission				
Arizona Water Company	08/18	Arizona Water Company	Docket No. W01445A-18-0164	Rate of Return
Colorado Public Utilities Commission				
Summit Utilities, Inc.	04/18	Colorado Natural Gas Company	Docket No. 18AL-0305G	Return on Equity
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Return on Equity
Delaware Public Service Commission				
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	Docket No. 13-466	Capital Structure
Hawaii Public Utilities Commission				
Kaupulehu Water Company	02/18	Kaupulehu Water Company	Docket No. 2016-0363	Rate of Return
Aqua Engineers, LLC	05/17	Puhi Sewer & Water Company	Docket No. 2017-0118	Cost of Service / Rate Design
Hawaii Resources, Inc.	09/16	Laie Water Company	Docket No. 2016-0229	Cost of Service / Rate Design
Illinois Commerce Commission				
Utility Services of Illinois, Inc.	11/17	Utility Services of Illinois, Inc.	Docket No. 17-1106	Cost of Service / Rate Design
Aqua Illinois, Inc.	04/17	Aqua Illinois, Inc.	Docket No. 17-0259	Rate of Return
Utility Services of Illinois, Inc.	04/15	Utility Services of Illinois, Inc.	Docket No. 14-0741	Rate of Return
Indiana Utility Regulatory Commission				
Aqua Indiana, Inc.	03/16	Aqua Indiana, Inc. Aboite Wastewater Division	Docket No. 44752	Rate of Return
Twin Lakes, Utilities, Inc.	08/13	Twin Lakes, Utilities, Inc.	Docket No. 44388	Rate of Return
Kansas Corporation Commission				
Atmos Energy	07/19	Atmos Energy	19-ATMG-525-RTS	Rate of Return
Louisiana Public Service Commission				
Louisiana Water Service, Inc.	06/13	Louisiana Water Service, Inc.	Docket No. U-32848	Rate of Return
Maryland Public Service Commission				
FirstEnergy, Inc.	08/18	Potomac Edison Company	Case No. 9490	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Massachusetts Department of Public Utilities				
Liberty Utilities	07/15	Liberty Utilities d/b/a New England Natural Gas Company	Docket No. 15-75	Rate of Return
Mississippi Public Service Commission				
Atmos Energy	03/19	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Atmos Energy	07/18	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Missouri Public Service Commission				
Indian Hills Utility Operating Company, Inc.	10/17	Indian Hills Utility Operating Company, Inc.	Case No. SR-2017-0259	Rate of Return
Raccoon Creek Utility Operating Company, Inc.	09/16	Raccoon Creek Utility Operating Company, Inc.	Docket No. SR-2016-0202	Rate of Return
New Jersey Board of Public Utilities				
Aqua New Jersey, Inc.	12/18	Aqua New Jersey, Inc.	Docket No. WR18121351	Rate of Return
Middlesex Water Company	10/17	Middlesex Water Company	Docket No. WR17101049	Rate of Return
Middlesex Water Company	03/15	Middlesex Water Company	Docket No. WR15030391	Rate of Return
The Atlantic City Sewerage Company	10/14	The Atlantic City Sewerage Company	Docket No. WR14101263	Cost of Service / Rate Design
Middlesex Water Company	11/13	Middlesex Water Company	Docket No. WR1311059	Capital Structure
North Carolina Utilities Commission				
Carolina Water Service, Inc.	06/19	Carolina Water Service, Inc.	Docket No. W-354 Sub 364	Rate of Return
Carolina Water Service, Inc.	09/18	Carolina Water Service, Inc.	Docket No. W-354 Sub 360	Rate of Return
Aqua North Carolina, Inc.	07/18	Aqua North Carolina, Inc.	Docket No. W-218 Sub 497	Rate of Return
Public Utilities Commission of Ohio				
Aqua Ohio, Inc.	05/16	Aqua Ohio, Inc.	Docket No. 16-0907-WW-AIR	Rate of Return
Pennsylvania Public Utility Commission				
Valley Energy, Inc.	07/19	C&T Enterprises	Docket No. R-2019-3008209	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Wellsboro Electric Company	07/19	C&T Enterprises	Docket No. R-2019-3008208	Rate of Return
Citizens' Electric Company of Lewisburg	07/19	C&T Enterprises	Docket No. R-2019-3008212	Rate of Return
Steelton Borough Authority	01/19	Steelton Borough Authority	Docket No. A-2019-3006880	Valuation
Mahoning Township, PA	08/18	Mahoning Township, PA	Docket No. A-2018-3003519	Valuation
SUEZ Water Pennsylvania Inc.	04/18	SUEZ Water Pennsylvania Inc.	Docket No. R-2018-000834	Rate of Return
Columbia Water Company	09/17	Columbia Water Company	Docket No. R-2017-2598203	Rate of Return
Veolia Energy Philadelphia, Inc.	06/17	Veolia Energy Philadelphia, Inc.	Docket No. R-2017-2593142	Rate of Return
Emporium Water Company	07/14	Emporium Water Company	Docket No. R-2014-2402324	Rate of Return
Columbia Water Company	07/13	Columbia Water Company	Docket No. R-2013-2360798	Rate of Return
Penn Estates Utilities, Inc.	12/11	Penn Estates, Utilities, Inc.	Docket No. R-2011-2255159	Capital Structure / Long-Term Debt Cost Rate
South Carolina Public Service Commission				
Carolina Water Service, Inc.	02/18	Carolina Water Service, Inc.	Docket No. 2017-292-WS	Rate of Return
Carolina Water Service, Inc.	06/15	Carolina Water Service, Inc.	Docket No. 2015-199-WS	Rate of Return
Carolina Water Service, Inc.	11/13	Carolina Water Service, Inc.	Docket No. 2013-275-WS	Rate of Return
United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	Docket No. 2013-199-WS	Rate of Return
Utility Services of South Carolina, Inc.	09/13	Utility Services of South Carolina, Inc.	Docket No. 2013-201-WS	Rate of Return
Tega Cay Water Services, Inc.	11/12	Tega Cay Water Services, Inc.	Docket No. 2012-177-WS	Capital Structure
Virginia State Corporation Commission				
WGL Holdings, Inc.	7/18	Washington Gas Light Company	PUR-2018-00080	Rate of Return
Atmos Energy Corporation	5/18	Atmos Energy Corporation	PUR-2018-00014	Rate of Return
Aqua Virginia, Inc.	7/17	Aqua Virginia, Inc.	PUR-2017-00082	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Massanutten Public Service Corp.	08/14	Massanutten Public Service Corp.	PUE-2014-00035	Rate of Return / Rate Design

Blue Granite Water Company
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to D'Ascendis Direct Exhibit No. 1

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Blue Granite Water Company
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
at June 30, 2019

Type Of Capital	Ratios (1)	Cost Rate		Weighted Cost Rate
Long-Term Debt	47.09%	5.73%	(1)	2.70%
Common Equity	52.91%	10.20% - 10.70%	(2)	5.40% - 5.66%
Total	100.00%			8.10% - 8.36%

Notes:

(1) Company-Provided.
(2) From page 2 of this Schedule.

Blue Granite Water Company
Brief Summary of Common Equity Cost Rate

Line No.	Principal Methods	Proxy Group of Six Water Companies
1.	Discounted Cash Flow Model (DCF) (1)	9.03%
2.	Risk Premium Model (RPM) (2)	10.39%
3.	Capital Asset Pricing Model (CAPM) (3)	9.91%
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	11.57%
5.	Indicated Common Equity Cost Rate before Adjustment for Business Risk	10.20%
6.	Business Risk Adjustment (5)	0.50%
7.	Recommended Common Equity Cost Rate after Adjustment for Business Risk	10.70%
8.	Range of Common Equity Cost Rates	10.20% - 10.70%

Notes:
(1) From Schedule DWD-3.
(2) From page 1 of Schedule DWD-4.
(3) From page 1 of Schedule DWD-5.
(4) From page 1 of Schedule DWD-7.
(5) Business risk adjustment to reflect Blue Granite Water Company's greater business risk due to its unique risks as well as its small size relative to the proxy group as detailed in the accompanying direct testimony.

Proxy Group of Six Water Companies
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2014 - 2018, Inclusive

	2018	2017	2016	2015	2014	
			(MILLIONS OF DOLLARS)			
CAPITALIZATION STATISTICS						
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	$2,806.355	$2,520.354	$2,397.831	$2,285.766	$2,178.876	
SHORT-TERM DEBT	$198.340	$212.952	$175.872	$117.184	$94.428	
TOTAL CAPITAL EMPLOYED	$3,004.695	$2,733.306	$2,573.703	$2,402.950	$2,273.304	
INDICATED AVERAGE CAPITAL COST RATES (2)						
TOTAL DEBT	4.852 %	4.97 %	5.182 %	5.248 %	5.393 %	
PREFERRED STOCK	5.92 %	5.91 %	5.91 %	5.91 %	5.67 %	
						5 YEAR
CAPITAL STRUCTURE RATIOS						AVERAGE
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	45.14 %	43.47 %	44.03 %	44.81 %	44.08 %	44.31 %
PREFERRED STOCK	0.11	0.12	0.13	0.13	0.14	0.12
COMMON EQUITY	54.75	56.41	55.84	55.06	55.78	55.57
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT-TERM	48.62 %	47.48 %	46.82 %	46.30 %	46.28 %	47.10 %
PREFERRED STOCK	0.10	0.11	0.12	0.13	0.14	0.12
COMMON EQUITY	51.28	52.41	53.06	53.57	53.58	52.78
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
FINANCIAL STATISTICS						
FINANCIAL RATIOS - MARKET BASED						
EARNINGS / PRICE RATIO	3.56 %	3.46 %	3.73 %	4.55 %	4.84 %	4.03 %
MARKET / AVERAGE BOOK RATIO	307.51	303.79	271.29	219.78	202.93	261.06
DIVIDEND YIELD	2.05	2.06	2.31	2.83	3.00	2.45
DIVIDEND PAYOUT RATIO	57.39	59.63	61.35	61.54	61.49	60.28
RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY	10.83 %	10.43 %	9.97 %	9.90 %	9.74 %	10.17 %
TOTAL DEBT / EBITDA (3)	3.98 x	3.43 x	3.42 x	3.46 x	3.54 x	3.56 x
FUNDS FROM OPERATIONS / TOTAL DEBT (4)	23.84 %	25.57 %	23.90 %	26.23 %	26.00 %	25.11 %
TOTAL DEBT / TOTAL CAPITAL	48.62 %	47.48 %	46.82 %	46.30 %	46.28 %	47.10 %

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.

(2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.

(3) Total debt relative to EBITDA (Earnings before Interest, Income Taxes, Depreciation and Amortization).

(4) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) plus interest charges as a percentage of total debt.

Source of Information: Company Annual Forms 10-K

Capital Structure Based upon Total Permanent Capital for the
Proxy Group of Six Water Companies
2014 - 2018, Inclusive

	2018	2017	2016	2015	2014	5 YEAR AVERAGE
American States Water Co.						
Long-Term Debt	36.54 %	37.75 %	39.40 %	41.15 %	39.15 %	38.80 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	63.46	62.25	60.60	58.85	60.85	61.20
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
American Water Works Company Inc						
Long-Term Debt	56.55 %	55.81 %	54.74 %	53.89 %	52.70 %	54.74 %
Preferred Stock	0.05	0.07	0.09	0.11	0.15	0.09
Common Equity	43.40	44.12	45.17	46.00	47.15	45.17
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Artesian Resources Corporation						
Long-Term Debt	43.42 %	42.17 %	42.71 %	44.23 %	45.81 %	43.67 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.58	57.83	57.29	55.77	54.19	56.33
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
California Water Service Group						
Long-Term Debt	52.74 %	43.40 %	45.83 %	44.69 %	40.46 %	45.42 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	47.26	56.60	54.17	55.31	59.54	54.58
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Middlesex Water Co.						
Long-Term Debt	38.94 %	38.65 %	38.91 %	40.44 %	41.55 %	39.70 %
Preferred Stock	0.59	0.64	0.68	0.69	0.71	0.66
Common Equity	60.47	60.71	60.41	58.87	57.74	59.64
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
York Water Co.						
Long-Term Debt	42.68 %	43.02 %	42.60 %	44.46 %	44.81 %	43.51 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	57.32	56.98	57.40	55.54	55.19	56.49
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Six Water Companies						
Long-Term Debt	45.14 %	43.47 %	44.03 %	44.81 %	44.08 %	44.31 %
Preferred Stock	0.11	0.12	0.13	0.13	0.14	0.12
Common Equity	54.75	56.41	55.84	55.06	55.78	55.57
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information
Annual Forms 10-K

Blue Granite Water Company
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for
Proxy Group of Six Water Companies

Proxy Group of Six Water Companies	[1] Average Dividend Yield (1)	[2] Value Line Projected Five Year Growth in EPS (2)	[3] Reuters Mean Consensus Projected Five Year Growth Rate in EPS	[4] Zack's Five Year Projected Growth Rate in EPS	[5] Yahoo! Finance Projected Five Year Growth in EPS	[6] Average Projected Five Year Growth in EPS (3)	[7] Adjusted Dividend Yield (4)	[8] Indicated Common Equity Cost Rate (5)
American States Water Co.	1.64 %	8.00 %	NA %	8.00 %	6.00 %	7.33 %	1.70 %	9.03 %
American Water Works Company Inc	1.74	9.50	10.60	8.10	8.20	9.10	1.82	10.92
Artesian Resources Corporation	2.70	NA	NA	NA	4.00	4.00	2.75	6.75
California Water Service Group	1.55	8.00	NA	10.00	9.80	9.27	1.62	10.89
Middlesex Water Co.	1.59	7.50	NA	NA	2.70	5.10	1.63	6.73
York Water Co.	1.96	9.50	NA	NA	4.90	7.20	2.03	9.23
							Average	8.93 %
							Median	9.13 %
							Average of Mean and Median	9.03 %

NA= Not Available

Notes:

(1) Indicated dividend at 07/31/2019 divided by the average closing price of the last 60 trading days ending 07/31/2019 for each company.

(2) From pages 2 through 7 of this Schedule.

(3) Average of columns 2 through 5 excluding negative growth rates.

(4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co., 1.64% x (1+(1/2 x 7.33%)) = 1.70%.

(5) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.reuters.com Downloaded on 07/31/2019
www.zacks.com Downloaded on 07/31/2019
www.yahoo.com Downloaded on 07/31/2019

AMER. STATES WATER NYSE-AWR

RECENT PRICE 74.38 | P/E RATIO 38.1 (Trailing: 41.8 Median: 21.0) | RELATIVE P/E RATIO 2.23 | DIV'D YLD 1.6% | VALUE LINE

TIMELINESS 2 Lowered 5/24/19
SAFETY 2 Raised 7/20/12
TECHNICAL 1 Raised 7/12/19
BETA .70 (1.00 = Market)

2022-24 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	75	(Nil)	*2%*
Low	55	(-25%)	*-5%*

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	0	0	0	0	0	0	0	0	0
Options	4	0	2	3	12	1	12	1	10
to Sell	4	1	3	3	2	3	6	3	6

Institutional Decisions

	3Q2018	4Q2018	1Q2019
to Buy	107	140	138
to Sell	109	102	105
Hld's(000)	26103	26276	26624

	2019	2020	2021	2022
High:	76.4			
Low:	63.3			

LEGENDS
1.35 x Dividends p sh divided by Interest Rate
. . . . Relative Price Strength
2-for-1 split 9/13
Options: Yes
Shaded area indicates recession

Target Price Range 2022 | 2023 | 2024

% TOT. RETURN 6/19

	THIS STOCK	VL ARITH.* INDEX
1 yr.	33.8	-1.2
3 yr.	82.0	33.7
5 yr.	151.2	35.3

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
6.99	6.81	7.03	7.88	8.75	9.21	9.74	10.71	11.12	12.12	12.19	12.17	12.56	11.92	12.01	11.88	*12.45*	*12.85*	Revenues per sh	*15.75*
1.04	1.11	1.32	1.45	1.65	1.69	1.70	2.11	2.13	2.48	2.65	2.67	2.81	2.70	2.96	2.84	*3.10*	*3.30*	"Cash Flow" per sh	*4.00*
.39	.53	.66	.67	.81	.78	.81	1.11	1.12	1.41	1.61	1.57	1.61	1.62	1.88	1.72	*1.95*	*2.10*	Earnings per sh [A]	*2.75*
.44	.44	.45	.46	.48	.50	.51	.52	.55	.64	.76	.83	.87	.91	.99	1.06	*1.14*	*1.22*	Div'd Decl'd per sh [B]■	*1.70*
1.88	2.51	2.12	1.95	1.45	2.23	2.09	2.12	2.13	1.77	2.52	1.89	2.39	3.55	3.08	3.44	*3.45*	*3.50*	Cap'l Spending per sh	*3.25*
6.98	7.51	7.86	8.32	8.77	8.97	9.70	10.13	10.84	11.80	12.72	13.24	12.77	13.52	14.45	15.19	*15.85*	*16.60*	Book Value per sh [D]	*19.35*
30.42	33.50	33.60	34.10	34.46	34.60	37.06	37.26	37.70	38.53	38.72	38.29	36.50	36.57	36.68	36.76	*36.90*	*37.00*	Common Shs Outst'g [C]	*37.50*
31.9	23.2	21.9	27.7	24.0	22.6	21.2	15.7	15.4	14.3	17.2	20.1	24.6	25.6	25.7	34.0	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*23.5*
1.82	1.23	1.17	1.50	1.27	1.36	1.41	1.00	.97	.91	.97	1.06	1.24	1.34	1.29	1.83			Relative P/E Ratio	*1.30*
3.5%	3.6%	3.1%	2.5%	2.5%	2.9%	2.9%	3.0%	3.2%	3.1%	2.7%	2.6%	2.2%	2.2%	2.0%	1.8%			Avg Ann'l Div'd Yield	*2.6%*
361.0	398.9	419.3	466.9	472.1	465.8	458.6	436.1	440.6	436.8	*460*	*475*	Revenues ($mill)	*590*
29.5	41.4	42.0	54.1	62.7	61.1	60.5	59.7	69.4	63.9	*72.0*	*78.0*	Net Profit ($mill)	*103*
38.9%	43.2%	41.7%	39.9%	36.3%	38.4%	38.4%	36.8%	36.0%	22.0%	*23.0%*	*23.0%*	Income Tax Rate	*23.0%*
3.2%	5.8%	2.0%	2.5%	- -	- -	- -	- -	2.5%	- -	*Nil*	*1.0%*	AFUDC % to Net Profit	*1.0%*
45.9%	44.3%	45.4%	42.2%	39.8%	39.1%	41.1%	39.4%	38.0%	40.5%	*42.0%*	*45.0%*	Long-Term Debt Ratio	*46.0%*
54.1%	55.7%	54.6%	57.8%	60.2%	60.9%	58.9%	60.6%	62.0%	59.5%	*58.0%*	*55.0%*	Common Equity Ratio	*54.0%*
665.0	677.4	749.1	787.0	818.4	832.6	791.5	815.3	854.9	938.4	*1010*	*1115*	Total Capital ($mill)	*1350*
866.4	855.0	896.5	917.8	981.5	1003.5	1060.8	1150.9	1205.0	1296.3	*1360*	*1435*	Net Plant ($mill)	*1650*
5.9%	7.6%	7.1%	8.3%	8.9%	8.6%	9.0%	8.6%	9.3%	7.9%	*8.0%*	*8.0%*	Return on Total Cap'l	*9.0%*
8.2%	11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	12.1%	13.1%	11.4%	*12.0%*	*12.5%*	Return on Shr. Equity	*14.0%*
8.2%	11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	12.1%	13.1%	11.4%	*12.0%*	*12.5%*	Return on Com Equity	*14.0%*
3.2%	5.8%	5.3%	6.6%	6.8%	5.7%	6.0%	5.3%	6.2%	4.5%	*5.0%*	*5.0%*	Retained to Com Eq	*5.5%*
61%	47%	49%	45%	47%	53%	54%	56%	52%	61%	*60%*	*60%*	All Div'ds to Net Prof	*62%*

CAPITAL STRUCTURE as of 3/31/19
Total Debt $416.9 mill. **Due in 5 Yrs** $100.7 mill.
LT Debt $376.6 mill. **LT Interest** $24.0 mill. (33% of Cap'l)

Leases, Uncapitalized: Annual rentals $2.6 mill.
Pension Assets-12/18 $162.5 mill. **Oblig.** $196.1 mill.
Pfd Stock None

Common Stock 36,795,218 shs. **as of 5/2/19**

MARKET CAP: $2.7 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2017	2018	3/31/19
Cash Assets	.2	7.1	1.8
Accts Receivable	26.1	23.4	17.5
Other	129.2	101.0	97.5
Current Assets	155.5	131.5	116.8
Accts Payable	51.0	59.5	53.2
Debt Due	59.3	40.3	.3
Other	46.4	46.8	54.1
Current Liab.	156.7	146.6	107.6

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	3.5%	- -	*4.5%*
"Cash Flow"	6.0%	3.0%	*6.0%*
Earnings	9.0%	4.5%	*8.0%*
Dividends	7.5%	9.0%	*9.5%*
Book Value	5.0%	4.0%	*5.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	93.5	112.0	123.8	106.8	436.1
2017	98.8	113.2	124.4	104.2	440.6
2018	94.7	106.9	124.2	111.0	436.8
2019	101.7	*115*	*130*	*113.3*	*460*
2020	*103*	*122*	*133*	*117*	*475*

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	.28	.45	.59	.30	1.62
2017	.34	.62	.57	.35	1.88
2018	.29	.44	.62	.37	1.72
2019	.35	*.52*	*.68*	*.40*	*1.95*
2020	*.35*	*.60*	*.70*	*.45*	*2.10*

Calendar	QUARTERLY DIVIDENDS PAID [B]■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.213	.213	.224	.224	.87
2016	.224	.224	.224	.242	.91
2017	.242	.242	.255	.255	.99
2018	.255	.255	.275	.275	1.06
2019	.275	.275			

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 259,919 customers in 70 cities in 10 counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,353 customers in Big Bear Lake and San Bernardino Cnty. Provides water & wastewater services to U.S. military bases through its ASUS sub. Sold Chaparral City Wtr. of AZ. (6/11). Employs about 815. BlackRock, Inc. owns 15.1% of out. shares; Vanguard, 11.5%; off. & dir. 1.2%. (4/19 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprowls. Inc: CA. Addr.: 630 East Foothill Blvd., San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

American States Water has been granted rate relief. In June, the California Public Utility Commission (CPUC) handed down a final ruling on the Golden State Water (GSWC) subsidiary's 2017 petition seeking to raise customers' bills. Actually, the CPUC agreed to a prior settlement made between the utility and the CPUC's Public Advocate Office. According to the ruling, the increased revenue will be retroactive to the beginning of this year. California works on a three-year cycle, so rates are now established through 2021, which removes some of GSWC's regulatory risk. The water utility was also authorized to spend $335 million to upgrade existing pipelines and other assets.

The nonregulated operations are boosting the bottom line. Through its ASUS subsidiary, American States provides water services to U.S. military bases. In the first quarter, this sector was responsible for 31% of the company's net income, compared to 17% in the similar year-ago period. Increased earnings were the result of ongoing construction at Fort Riley, KS along with greater management fees from more activity at other bases. While the rate of growth may slow here, many military bases are privatizing their water services, and we expect the company to win a fair share of this new business. Since this sector is nonregulated, earnings from here are not capped, as they are in the utility operations.

Earnings prospects are good. The implementation of higher rates together with the greater contributions from ASUS should enable American States' share net to rise by double digits in 2019. Next year should be solid too, as share earnings could increase another 7%.

These timely shares do not hold much appeal for utility investors. Like many in this group, AWR has soared in value over the past few years. Thus, income-oriented investors could probably do better elsewhere. (As an alternative, the three-month Treasury note offers a higher yield while being virtually risk free.) At the recent quotation, all of American States' positives appear to be reflected in the stock price. Indeed, the equity is trading close to the high end of its projected 2022-2024 Target Price Range.

James A. Flood *July 12, 2019*

(A) Primary earnings. Excludes nonrecurring gains/(losses): '04, 7¢; '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢); '11, 10¢. Next earnings report due mid-August.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.
(D) Includes intangibles. As of 3/31/19; $1.1 million/$0.03 a share.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	80
Earnings Predictability	90

AMERICAN WATER NYSE-AWK

RECENT PRICE 115.73 | P/E RATIO 32.1 (Trailing: 36.4 Median: 19.0) | RELATIVE P/E RATIO 1.88 | DIV'D YLD 1.8% | VALUE LINE

TIMELINESS 1 Raised 4/5/19
SAFETY 3 New 7/25/08
TECHNICAL 2 Raised 7/12/19
BETA .60 (1.00 = Market)

2022-24 PROJECTIONS

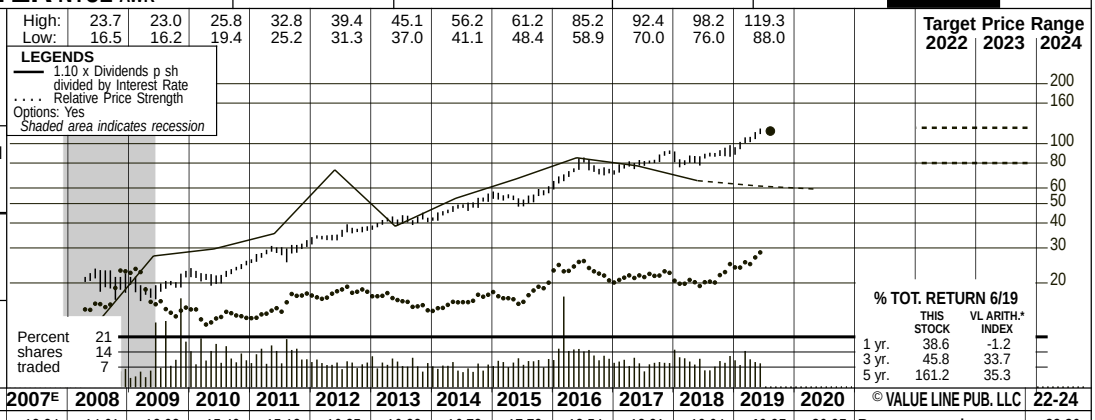
	Price	Gain	Ann'l Total Return
High	120	(+5%)	*3%*
Low	80	(-30%)	*-6%*

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	0	0	2	0	0	0	0	0	0
Options	1	0	0	0	7	9	0	0	12
to Sell	1	0	0	0	0	0	0	0	5

Institutional Decisions

	3Q2018	4Q2018	1Q2019
to Buy	290	362	364
to Sell	309	287	325
Hld's(000)	154530	155716	155942



2003	2004	2005	2006E	2007E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
--	--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	18.54	18.81	19.04	*19.95*	*20.95*	Revenues per sh	*23.80*
--	--	--	.65	d.47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	5.26	5.14	6.15	*6.75*	*7.05*	"Cash Flow" per sh	*8.30*
--	--	--	d.97	d2.14	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	2.62	2.38	3.15	*3.60*	*3.85*	Earnings per sh A	*4.70*
--	--	--	--	--	.40	.82	.86	.90	1.21	.84	1.21	1.33	1.47	1.62	1.78	*1.96*	*2.10*	Div'd Decl'd per sh B■	*2.75*
--	--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	7.36	8.04	8.78	*9.15*	*9.15*	Cap'l Spending per sh	*9.00*
--	--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	29.24	30.13	32.42	*34.55*	*36.55*	Book Value per sh D	*41.25*
--	--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	178.10	178.44	180.68	*181.00*	*182.00*	Common Shs Outst'g C	*189.00*
--	--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	27.7	33.8	27.3	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*21.5*
--	--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.03	1.45	1.70	1.47			Relative P/E Ratio	*1.20*
--	--	--	--	--	1.9%	4.2%	3.8%	3.1%	3.4%	2.0%	2.5%	2.5%	2.0%	2.0%	2.1%			Avg Ann'l Div'd Yield	*2.8%*
2440.7	2710.7	2666.2	2876.9	2901.9	3011.3	3159.0	3302.0	3357.0	3440.0	*3615*	*3815*	Revenues ($mill)	*4500*
209.9	267.8	304.9	374.3	369.3	429.8	476.0	468.0	426.0	567.0	*650*	*700*	Net Profit ($mill)	*890*
37.9%	40.4%	39.5%	40.7%	39.1%	39.4%	39.1%	39.2%	53.3%	28.2%	*21.0%*	*21.0%*	Income Tax Rate	*21.0%*
--	--	--	6.2%	5.1%	--	--	--	5.1%	4.0%	*5.0%*	*5.0%*	AFUDC % to Net Profit	*5.0%*
56.9%	56.8%	55.7%	53.9%	52.4%	52.4%	53.7%	52.4%	54.7%	56.3%	*57.0%*	*58.0%*	Long-Term Debt Ratio	*59.0%*
43.1%	43.2%	44.2%	46.1%	47.6%	47.4%	46.2%	47.5%	45.3%	43.6%	*43.0%*	*42.0%*	Common Equity Ratio	*41.0%*
9289.0	9561.3	9580.3	9635.5	9940.7	10364	10911	10967	11875	13433	*14600*	*15700*	Total Capital ($mill)	*18800*
10524	11059	11021	11739	12391	12900	13933	14992	16246	17409	*18500*	*19500*	Net Plant ($mill)	*22500*
3.8%	4.4%	4.8%	5.4%	5.1%	5.5%	5.7%	5.6%	4.9%	5.4%	*5.5%*	*5.5%*	Return on Total Cap'l	*6.0%*
5.2%	6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	9.0%	7.9%	9.7%	*10.5%*	*10.5%*	Return on Shr. Equity	*11.5%*
5.2%	6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	9.0%	7.9%	9.7%	*10.5%*	*10.5%*	Return on Com Equity	*11.5%*
1.8%	2.8%	3.5%	3.6%	4.7%	4.3%	4.7%	4.0%	2.5%	4.2%	*5.0%*	*5.0%*	Retained to Com Eq	*5.0%*
65%	56%	52%	57%	40%	50%	50%	56%	68%	56%	*54%*	*55%*	All Div'ds to Net Prof	*59%*

CAPITAL STRUCTURE as of 3/31/19
Total Debt $8831.0 mil. **Due in 5 Yrs** $1555.0 mil.
LT Debt $7562.0 mil. **LT Interest** $328.0 mil. (56% of Cap'l)

Leases, Uncapitalized: Annual rentals $17.0 mill.
Pension Assets12/18 $1499.0 mill
Oblig. $1892.0 mill.
Pfd Stock $7.0 mill. **Pfd Div'd** $.4 mill

Common Stock 180,518,810 shs.
as of 4/25/19

MARKET CAP: $20.9 billion (Large Cap)

CURRENT POSITION ($MILL.)	2017	2018	3/31/19
Cash Assets	82	158	85
Accts Receivable	272	301	307
Other	366	322	299
Current Assets	720	781	691
Accts Payable	195	175	130
Debt Due	1227	1035	1269
Other	903	884	757
Current Liab.	2325	2094	2156

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	3.0%	3.5%	*4.0%*
"Cash Flow"	18.5%	6.0%	*7.0%*
Earnings	--	6.5%	*9.5%*
Dividends	--	10.5%	*9.0%*
Book Value	1.5%	4.0%	*5.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	743.0	827.0	930.0	802.0	3302.0
2017	756.0	844.0	936.0	821.0	3357.0
2018	761.0	853.0	976.0	850.0	3440.0
2019	813.0	*902*	*1025*	*900*	*3640*
2020	*835*	*950*	*1080*	*950*	*3815*

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	.46	.77	.83	.57	2.62
2017	.52	.73	1.12	.01	2.38
2018	.59	.91	1.03	.62	3.15
2019	.62	*.90*	*1.20*	*.88*	*3.60*
2020	*.60*	*.88*	*1.25*	*1.12*	*3.85*

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.31	.34	.34	.34	1.33
2016	.34	.375	.375	.375	1.47
2017	.375	.415	.415	.415	1.62
2018	.415	.455	.455	.455	1.78
2019	.455	.50			

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to more than 14 million people in 46 states and Ontario, Canada. Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 87% of 2018 revenues. New Jersey is its largest market accounting for 24% of regulated revenues; Pennsylvania, 23%. Has 7,100 employees. The Vanguard Grp, owns 11.0% of outstanding shares; BlackRock, Inc., 7.9%; officers & directors, less than 1.0%. (3/19 Proxy). President & CEO: Susan N. Story. Chairman: George MacKenzie. Address: 1 Water Street, Camden, NJ 08102. Tel.: 856-346-8200. Internet: www.amwater.com.

Shares of American Water Works continue to soar. Once again, the water utility's stock has outperformed the S&P 500 by a wide margin. In the second quarter, AWK rose over 11%, versus a 4% increase in the broader market. This trend has been ongoing since mid-2015.

Our ranking system favors the stock. AWK is ranked Highest (1) for relative price performance in the year ahead. Based on other financial metrics, such as P/E ratio and dividend yield, however, the equity seems more than fully valued.

Long-term investors should avoid this equity. Indeed, the price of AWK almost exceeded our Target Price Range projection through 2022-2024. Most of this can probably be attributed to the Federal Reserve's indicating that monetary policy will be easier going forward. Income-oriented accounts should be aware that they can get a higher yield with much less risk by owning the three-month Treasury note. In any case, only those who believe there is a secular shift under way in how the market evaluates water stocks should consider AWK.

The company's earnings and dividend prospects remain bright. In 2018, American Water had a very strong first two quarters thanks to rate hikes. Still, we think that share earnings were able to equal these difficult comparisons. The water utility's acquisition strategy (see below) and cost-control efforts are the driving force behind the strong bottom-line growth, which we expect to continue.

Acquisition activity should pick up in the second half. The first two quarters of this year were quiet as American Water only purchased five water districts, which added 4,700 customers. By the end of 2019, however, nine additional purchases are expected to be closed for 62,000 customers. These opportunities exist because of the fragmented nature of the water industry. The company can absorb smaller districts and use economies of scale to operate them more profitably.

The capital budget is considerable. American Water has a five year-construction budget of $8.3 billion. More debt will be required to finance this program, but we expect the company's balance sheet to remain in adequate shape.

James A. Flood *July 12, 2019*

(A) Diluted earnings. Excludes nonrecur. losses: '08, $4.62; '09, $2.63; '11, $0.07. Disc. oper.: '06, ($0.04); '11, $0.03; '12, ($0.10); '13,($0.01). GAAP used as of 2014. Next earnings report due August 1st. Quarterly earnings do not sum in '16 due to rounding.
(B) Dividends paid in March, June, September, and December. ■ Div. reinvestment available.
(C) In millions. **(D)** Includes intangibles. On 3/31/19: $1.655 billion, $9.17/share.
(E) Pro forma numbers for '06 & '07.

Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	85
Earnings Predictability	85

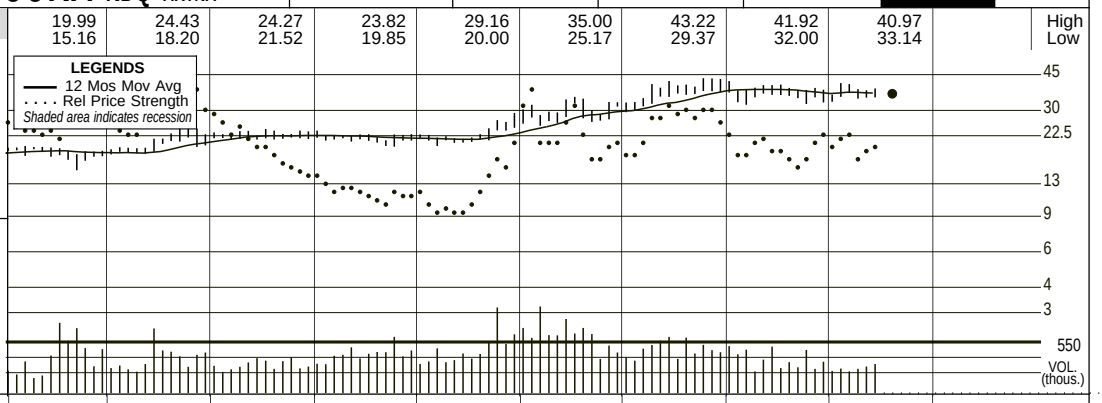
ARTESIAN RES. CORP. NDQ--ARTNA

RECENT PRICE **36.21** | TRAILING P/E RATIO **23.4** | RELATIVE P/E RATIO **1.39** | DIV'D YLD **2.7%** | **VALUE LINE**

RANKS

PERFORMANCE	**3**	*Average*
Technical	**3**	*Average*
SAFETY	**3**	*Average*
BETA .65	(1.00 = Market)	

Financial Strength	B
Price Stability	65
Price Growth Persistence	40
Earnings Predictability	85



© VALUE LINE PUBLISHING LLC	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020/2021
SALES PER SH	7.56	8.10	7.82	8.13	8.50	8.67	8.92	8.69	--	
"CASH FLOW" PER SH	1.64	2.04	1.87	2.04	2.22	2.43	2.55	2.66	--	
EARNINGS PER SH	.83	1.13	.94	1.07	1.26	1.41	1.51	1.54	*NA*	*NA/NA*
DIV'DS DECL'D PER SH	.76	.79	.82	.85	.87	.90	.93	.96	--	
CAP'L SPENDING PER SH	1.83	2.36	2.40	2.66	2.28	3.10	4.46	5.30	--	
BOOK VALUE PER SH	13.12	13.57	13.80	14.09	14.61	15.23	15.91	16.57	--	
COMMON SHS OUTST'G (MILL)	8.61	8.71	8.83	8.91	9.06	9.13	9.22	9.25	--	
AVG ANN'L P/E RATIO	22.5	18.3	23.9	20.5	18.0	20.9	24.2	23.9	*NA*	*NA/NA*
RELATIVE P/E RATIO	1.41	1.17	1.34	1.08	.93	1.14	1.21	1.35	--	
AVG ANN'L DIV'D YIELD	4.1%	3.8%	3.7%	3.9%	3.8%	3.1%	2.5%	2.6%	--	
SALES ($MILL)	65.1	70.6	69.1	72.5	77.0	79.1	82.2	80.4	--	
OPERATING MARGIN	45.5%	48.7%	47.0%	48.8%	43.0%	44.4%	44.6%	46.1%	--	
DEPRECIATION ($MILL)	7.4	7.9	8.3	8.7	8.8	9.2	9.6	10.3	--	
NET PROFIT ($MILL)	6.7	9.8	8.3	9.5	11.3	13.0	14.0	14.3	--	
INCOME TAX RATE	40.8%	40.2%	40.2%	40.1%	--	--	--	--	--	
NET PROFIT MARGIN	10.4%	14.0%	12.0%	13.1%	14.7%	16.4%	17.0%	17.8%	--	
WORKING CAP'L ($MILL)	d11.4	d11.4	d12.3	d13.5	d8.8	d4.7	d9.5	d21.6	--	
LONG-TERM DEBT ($MILL)	106.5	106.3	105.5	105.0	103.6	102.3	105.6	115.9	--	
SHR. EQUITY ($MILL)	113.0	118.2	121.8	125.6	132.3	139.0	146.6	153.3	--	
RETURN ON TOTAL CAP'L	4.6%	5.9%	5.1%	5.5%	6.3%	6.7%	6.8%	6.5%	--	
RETURN ON SHR. EQUITY	6.0%	8.3%	6.8%	7.6%	8.5%	9.3%	9.5%	9.3%	--	
RETAINED TO COM EQ	.5%	2.5%	.9%	1.6%	2.6%	3.4%	3.7%	3.6%	--	
ALL DIV'DS TO NET PROF	92%	70%	87%	79%	69%	63%	61%	62%	--	

Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.

Note: No analyst estimates available.

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Sales	2.5%	-2.5%
"Cash Flow"	6.5%	4.0%
Earnings	9.0%	2.0%
Dividends	3.0%	3.0%
Book Value	3.5%	4.0%

QUARTERLY SALES ($mill.)

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/17	19.2	20.5	22.3	20.2	82.2
12/31/18	18.9	20.2	21.9	19.4	80.4
12/31/19	19.4				
12/31/20					

EARNINGS PER SHARE

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/16	.30	.33	.48	.30	1.41
12/31/17	.34	.35	.42	.40	1.51
12/31/18	.38	.42	.42	.32	1.54
12/31/19	.39				
12/31/20					

QUARTERLY DIVIDENDS PAID

Cal-endar	1Q	2Q	3Q	4Q	Full Year
2016	.222	.225	.225	.228	.90
2017	.228	.232	.232	.235	.93
2018	.235	.239	.239	.242	.96
2019	.242	.246	.246		

INSTITUTIONAL DECISIONS

	3Q'18	4Q'18	1Q'19
to Buy	40	38	39
to Sell	26	27	32
Hld's(000)	3582	3846	3896

ASSETS ($mill.)	2017	2018	3/31/19
Cash Assets	1.0	.3	.3
Receivables	8.9	8.2	7.0
Inventory	1.5	1.5	1.6
Other	7.6	6.1	4.3
Current Assets	19.0	16.1	13.2
Property, Plant & Equip, at cost	582.0	629.4	- -
Accum Depreciation	117.6	126.9	- -
Net Property	464.4	502.5	508.6
Other	11.2	11.2	12.0
Total Assets	494.6	529.8	533.8
LIABILITIES ($mill.)			
Accts Payable	9.2	8.3	5.2
Debt Due	11.0	17.7	20.4
Other	8.3	11.7	14.9
Current Liab	28.5	37.7	40.5

LONG-TERM DEBT AND EQUITY as of 3/31/19

Total Debt $135.8 mill. **Due in 5 Yrs.** NA
LT Debt $115.4 mill.
Including Cap. Leases NA (43% of Cap'l)

Leases, Uncapitalized Annual rentals NA

Pension Liability None in '18 vs. None in '17

Pfd Stock None **Pfd Div'd Paid** None

Common Stock 9,275,000 shares (57% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: Artesian Resources Corp. operates as the holding company of nine wholly-owned subsidiaries offering water, wastewater and other services in Delaware, Maryland and Pennsylvania. Artesian Water, its principal subsidiary, distributes and sells water to residential, commercial, industrial, governmental, municipal, and utility customers throughout Delaware. In addition, Artesian Water provides services to other water utilities, including operations and billing functions, and has contract operation agreements with private and municipal water providers. It also provides water for public and private fire protection to customers in service territories. Artesian supplies 7.9 billion gallons of water per year through 1,311 miles of main to over 300,000 people. Artesian Wastewater Management, Inc. is a regulated entity that owns wastewater collection and treatment infrastructure and provides wastewater services to customers in Delaware. Has 241 employees. Chairman, C.E.O. & President: Dian C. Taylor. Address: 664 Churchmans Rd. , Newark, DE 19702. Tel.: (302) 453-6900. Internet: www.artesianresources.com.

E.B.

July 12, 2019

TOTAL SHAREHOLDER RETURN

Dividends plus appreciation as of 6/30/2019

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
0.41%	8.03%	-1.55%	18.81%	93.13%

CALIFORNIA WATER NYSE-CWT

RECENT PRICE 49.99 | P/E RATIO 35.7 (Trailing: 41.0 Median: 22.0) | RELATIVE P/E RATIO 2.09 | DIV'D YLD 1.6% | VALUE LINE

TIMELINESS 3 Lowered 6/7/19
SAFETY 3 Lowered 7/27/07
TECHNICAL 2 Raised 7/5/19
BETA .70 (1.00 = Market)

2022-24 PROJECTIONS

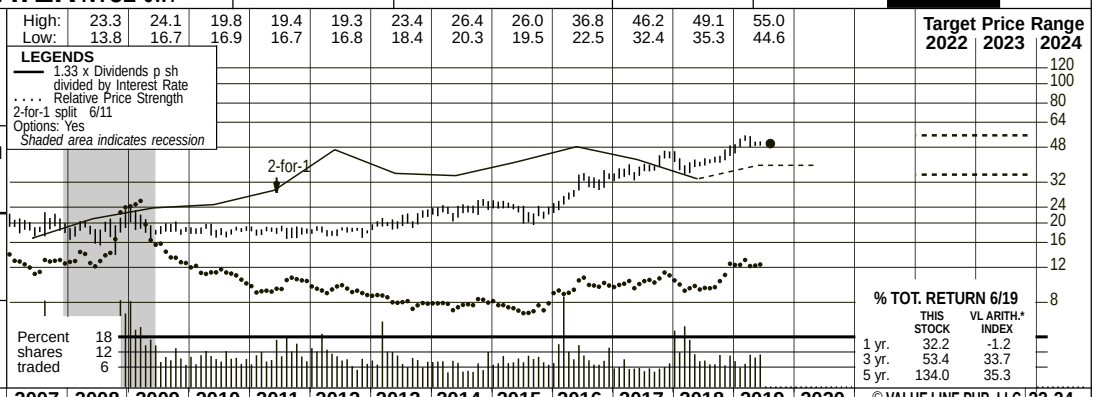
	Price	Gain	Ann'l Total Return
High	55	(+10%)	*4%*
Low	35	(-30%)	*-6%*

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	22	0	0
to Sell	1	0	1	0	0	0	2	0	2

Institutional Decisions

	3Q2018	4Q2018	1Q2019
to Buy	104	126	132
to Sell	77	76	81
Hld's(000)	35103	35160	35698



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
8.18	8.59	8.72	8.10	8.88	9.90	10.82	11.05	12.00	13.34	12.23	12.50	12.29	12.70	13.89	14.53	*14.45*	*14.90*	Revenues per sh	*15.50*
1.26	1.42	1.52	1.36	1.56	1.86	1.93	1.93	2.07	2.32	2.21	2.47	2.22	2.34	3.00	3.11	*3.05*	*3.35*	"Cash Flow" per sh	*3.60*
.61	.73	.74	.67	.75	.95	.98	.91	.86	1.02	1.02	1.19	.94	1.01	1.40	1.36	*1.40*	*1.70*	Earnings per sh A	*2.00*
.56	.57	.57	.58	.58	.59	.59	.60	.62	.63	.64	.65	.67	.69	.72	.75	*.79*	*.82*	Div'd Decl'd per sh B ■	*1.05*
2.19	1.87	2.01	2.14	1.84	2.41	2.66	2.97	2.83	3.04	2.58	2.76	3.69	4.77	5.40	5.65	*3.95*	*4.00*	Cap'l Spending per sh	*3.65*
7.22	7.83	7.90	9.07	9.25	9.72	10.13	10.45	10.76	11.28	12.54	13.11	13.41	13.75	14.44	15.19	*15.45*	*15.80*	Book Value per sh C	*17.00*
33.86	36.73	36.78	41.31	41.33	41.45	41.53	41.67	41.82	41.98	47.74	47.81	47.88	47.97	48.01	48.07	*48.50*	*49.00*	Common Shs Outst'g D	*50.00*
22.1	20.1	24.9	29.2	26.1	19.8	19.7	20.3	21.3	17.9	20.1	19.7	24.8	29.6	26.9	30.3	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*23.0*
1.26	1.06	1.33	1.58	1.39	1.19	1.31	1.29	1.34	1.14	1.13	1.04	1.25	1.55	1.35	1.64			Relative P/E Ratio	*1.25*
4.2%	3.9%	3.1%	2.9%	3.0%	3.1%	3.1%	3.2%	3.4%	3.5%	3.1%	2.8%	2.9%	2.3%	1.9%	1.8%			Avg Ann'l Div'd Yield	*2.5%*
449.4	460.4	501.8	560.0	584.1	597.5	588.4	609.4	666.9	691.2	*700*	*730*	Revenues ($mill) E	*775*
40.6	37.7	36.1	42.6	47.3	56.7	45.0	48.7	67.2	65.6	*68.0*	*83.5*	Net Profit ($mill)	*100*
40.3%	39.5%	40.5%	37.5%	30.3%	33.0%	36.0%	35.5%	30.1%	24.5%	*21.0%*	*21.0%*	Income Tax Rate	*21.0%*
7.6%	4.2%	7.6%	8.0%	4.3%	2.7%	4.3%	6.1%	3.5%	3.1%	*5.0%*	*5.0%*	AFUDC % to Net Profit	*5.0%*
47.1%	52.4%	51.7%	47.8%	41.6%	40.1%	44.4%	44.6%	42.7%	49.3%	*48.5%*	*45.5%*	Long-Term Debt Ratio	*38.0%*
52.9%	47.6%	48.3%	52.2%	58.4%	59.9%	55.6%	55.4%	57.3%	50.7%	*51.5%*	*54.5%*	Common Equity Ratio	*62.0%*
794.9	914.7	931.5	908.2	1024.9	1045.9	1154.4	1191.2	1209.3	1440.2	*1450*	*1425*	Total Capital ($mill)	*1375*
1198.1	1294.3	1381.1	1457.1	1515.8	1590.4	1701.8	1859.3	2048.0	2232.7	*2300*	*2385*	Net Plant ($mill)	*2500*
6.5%	5.5%	5.5%	6.3%	6.0%	6.3%	5.2%	5.5%	7.1%	5.9%	*5.5%*	*7.0%*	Return on Total Cap'l	*8.5%*
9.6%	8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	*9.0%*	*11.0%*	Return on Shr. Equity	*12.0%*
9.6%	8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	*9.0%*	*11.0%*	Return on Com Equity	*12.0%*
3.8%	3.0%	2.3%	3.4%	3.4%	4.1%	2.0%	2.4%	4.7%	4.0%	*4.0%*	*5.5%*	Retained to Com Eq	*5.5%*
60%	66%	71%	62%	56%	55%	71%	68%	51%	55%	*56%*	*48%*	All Div'ds to Net Prof	*53%*

CAPITAL STRUCTURE as of 3/31/19
Total Debt $940.7 mill. **Due in 5 Yrs** $430.1 mill.
LT Debt $710.6 mill. **LT Interest** $40.0 mill. (49% of Cap'l)

Pension Assets-12/18 $469.7 mill.
Oblig. $639.9 mill.

Pfd Stock None

Common Stock 48,134,000 shs.

MARKET CAP: $2.4 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2017	2018	3/31/19
Cash Assets	94.8	47.2	60.2
Other	133.1	141.5	132.5
Current Assets	227.9	188.7	192.7
Accts Payable	94.0	95.6	83.3
Debt Due	291.0	170.0	230.1
Other	106.0	55.6	70.6
Current Liab.	491.0	321.2	384.0

ANNUAL RATES of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	4.5%	2.0%	*2.0%*
"Cash Flow"	6.0%	5.0%	*4.0%*
Earnings	5.0%	5.5%	*8.0%*
Dividends	2.0%	3.0%	*6.5%*
Book Value	4.5%	4.5%	*2.5%*

QUARTERLY REVENUES ($ mill.) E

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	121.7	152.4	184.3	151.0	609.4
2017	122.1	171.1	211.7	162.0	666.9
2018	134.6	174.9	221.3	167.4	698.2
2019	126.1	*180*	*225*	*168.9*	*700*
2020	*140*	*185*	*230*	*175*	*730*

EARNINGS PER SHARE A

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	d.02	.24	.48	.31	1.01
2017	.02	.39	.70	.29	1.40
2018	d.02	.31	.75	.32	1.36
2019	d.16	*.40*	*.79*	*.37*	*1.40*
2020	*.08*	*.42*	*.80*	*.40*	*1.70*

QUARTERLY DIVIDENDS PAID B ■

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.1675	.1675	.1675	.1675	.67
2016	.1725	.1725	.1725	.1725	.69
2017	.18	.18	.18	.18	.72
2018	.1875	.1875	.1875	.1875	.75
2019	.1975	.1975			

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 486,900 customers in 100 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '18: residential, 67%; business, 19%; industrial, 5%; public authorities, 5%; other 4%. Off. and dir. own 1% of common stock (4/19 proxy). Has 1,184 employees. Pres. and CEO: Martin A. Kropelnicki. Inc.: DE. Addr.: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.

California Water Service Group posted a surprise share deficit of $0.16 to start 2019. The March-period figure widened on a year-over-year basis, missing both our and the Street's expectations by a considerable margin. Underpinning the sharp decline in net income was a laundry list of increased operating expenses, namely employee wages, depreciation and amortization, maintenance, and outside services, as well as higher income taxes and interest expense. Weather also played a role in the disappointing first-quarter showing. Heavy rain and prolonged winter conditions resulted in a $7.1 million contraction in accrued unbilled revenue.

Accordingly, we are shaving a quarter from our current-year bottom-line estimate, to $1.40 a share. Share net ought to rebound as we progress through 2019, as rate increases and collected funds used for construction ramp up. However, we may be spurred to revisit our profit forecasts if management is unable to effectively corral operating costs. On point, our 2020 earnings call is being lowered a nickel, to $1.70 a share, though this new forecast could well prove conservative.

The company remains entrenched in its long-term capital investment plan. Over the coming three to five years, California Water is poised to allocate roughly $750 million to bolster its aging infrastructure. This is in addition to spending close to $300 million in previous years. On balance, we think the upgrades, which focus primarily on revamping water pipe systems and improving treatment plant processes, ought to bear fruit. Lastly, some of this spending is likely to be recouped in the form of additional rate hikes.

Shares of the West Coast water utility have fallen two notches on our Timeliness Ranking Scale, to 3, and are now just an Average selection for the year ahead. Thus, near-term oriented accounts should turn their attention elsewhere at this juncture. Further, CWT stock has been on an impressive price run over the past three years, with the stock recently topping out around $55 per share. In our view, this may be an opportunistic time for seasoned investors to take some profits. Upside 3- to 5-years out is also limited at current levels.

Nicholas P. Patrikis *July 12, 2019*

(A) Basic EPS. Excl. nonrecurring gain (loss): '11, 4¢. Next earnings report due late August.
(B) Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
(C) Incl. intangible assets. In '18 : $24.7 mill., $0.51/sh.
(D) In millions, adjusted for splits.
(E) Excludes non-reg. rev.

Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	45
Earnings Predictability	65

MIDDLESEX WATER NDQ-MSEX

RECENT PRICE 59.36 | P/E RATIO 27.6 (Trailing: 28.5 Median: 21.0) | RELATIVE P/E RATIO 1.61 | DIV'D YLD 1.6% | VALUE LINE

TIMELINESS 3 Lowered 5/24/19
SAFETY 2 New 10/21/11
TECHNICAL 1 Raised 6/28/19
BETA .75 (1.00 = Market)

2022-24 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(Nil)	2%
Low	45	(-25%)	-4%

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	6	1
to Sell	0	1	0	0	1	0	3	0	2

Institutional Decisions

	3Q2018	4Q2018	1Q2019
to Buy	54	76	72
to Sell	50	52	67
Hld's(000)	9294	9247	9424

	High:	19.8	17.9	19.3	19.4	19.6	22.5	23.7	28.0	44.5	46.7	60.3	63.7
	Low:	12.0	11.6	14.7	16.5	17.5	18.6	19.1	21.2	25.0	32.2	34.0	51.0

LEGENDS
1.20 x Dividends p sh divided by Interest Rate
. . . . Relative Price Strength
Options: Yes
Shaded area indicates recession

Percent shares traded 12 8 4

Target Price Range 2022 | 2023 | 2024
120 100 80 64 48 32 24 20 16 12 8

% TOT. RETURN 6/19

	THIS STOCK	VL ARITH.* INDEX
1 yr.	43.0	-1.2
3 yr.	45.5	33.7
5 yr.	217.6	35.3

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
6.12	6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	8.16	8.00	8.42	*8.55*	*8.70*	Revenues per sh	*9.70*
1.15	1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	2.17	2.24	2.89	*3.05*	*3.15*	"Cash Flow" per sh	*3.50*
.61	.73	.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	1.38	1.38	1.96	*2.15*	*2.25*	Earnings per sh A	*2.45*
.65	.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	.81	.86	.91	*.97*	*1.00*	Div'd Decl'd per sh B■	*1.15*
1.87	2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	2.91	3.08	4.40	*3.50*	*3.50*	Cap'l Spending per sh	*3.50*
7.60	8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	13.40	14.02	15.17	*15.75*	*16.10*	Book Value per sh	*17.65*
10.48	11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	16.30	16.35	16.40	*16.50*	*16.75*	Common Shs Outst'g C	*17.00*
30.0	26.4	27.4	22.7	21.6	19.8	21.0	17.8	21.7	20.8	19.7	18.5	19.1	25.6	28.4	22.2	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*21.0*
1.71	1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.96	1.34	1.43	1.20			Relative P/E Ratio	*1.15*
3.5%	3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	2.3%	2.2%	2.1%			Avg Ann'l Div'd Yield	*2.2%*
91.2	102.7	102.1	110.4	114.8	117.1	126.0	132.9	130.8	138.1	*141*	*146*	Revenues ($mill)	*165*
10.0	14.3	13.4	14.4	16.6	18.4	20.0	22.7	22.8	32.5	*35.5*	*37.5*	Net Profit ($mill)	*41.5*
34.1%	32.1%	32.7%	33.9%	34.1%	35.0%	34.5%	34.0%	32.7%	2.8%	*21.0%*	*21.0%*	Income Tax Rate	*21.0%*
- -	6.8%	6.1%	3.4%	1.9%	1.7%	1.9%	2.7%	3.1%	1.4%	*2.0%*	*2.0%*	AFUDC % to Net Profit	*2.5%*
46.6%	43.1%	42.3%	41.5%	40.4%	40.5%	39.4%	37.9%	37.5%	37.8%	*38.0%*	*37.5%*	Long-Term Debt Ratio	*36.0%*
52.1%	55.8%	56.6%	57.4%	58.7%	58.8%	59.8%	61.5%	61.8%	61.6%	*61.5%*	*61.5%*	Common Equity Ratio	*63.5%*
267.9	310.5	312.5	316.5	321.4	335.8	345.4	355.4	370.7	404.1	*420*	*435*	Total Capital ($mill)	*475*
376.5	405.9	422.2	435.2	446.5	465.4	481.9	517.8	557.2	618.5	*625*	*635*	Net Plant ($mill)	*650*
5.0%	5.7%	5.2%	5.4%	5.9%	6.3%	6.6%	7.1%	6.9%	8.9%	*9.0%*	*9.0%*	Return on Total Cap'l	*9.5%*
7.0%	8.1%	7.5%	7.8%	8.7%	9.2%	9.6%	10.3%	9.8%	12.9%	*13.5%*	*14.0%*	Return on Shr. Equity	*14.0%*
7.0%	8.2%	7.5%	7.8%	8.7%	9.3%	9.6%	10.3%	9.9%	13.0%	*13.5%*	*14.0%*	Return on Com Equity	*14.0%*
.1%	2.1%	1.0%	1.4%	2.4%	3.1%	3.5%	4.3%	3.8%	7.0%	*7.5%*	*8.0%*	Retained to Com Eq	*7.5%*
98%	75%	87%	83%	73%	67%	63%	58%	62%	46%	*45%*	*44%*	All Div'ds to Net Prof	*47%*

CAPITAL STRUCTURE as of 3/31/19
Total Debt $215.2 mill. **Due in 5 Yrs** $56.8 mill.
LT Debt $158.4 mill. **LT Interest** $6.8 mill.
(Total interest coverage: 9.3x)
(38% of Cap'l)

Pension Assets-12/18 $66.8 mill.
Oblig. $83.9 mill.
Pfd Stock $2.4 mill. **Pfd Div'd:** $.1 mill.

Common Stock 16,468,462 shs.
as of 4/30/19

MARKET CAP: $975 million (Small Cap)

CURRENT POSITION ($MILL.)	2017	2018	3/31/19
Cash Assets	4.9	3.7	5.0
Other	24.3	27.1	24.7
Current Assets	29.2	30.8	29.7
Accts Payable	13.9	19.3	14.0
Debt Due	34.9	55.8	56.8
Other	15.7	19.3	22.4
Current Liab.	64.5	94.4	93.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	2.5%	3.5%	*3.0%*
"Cash Flow"	5.5%	9.0%	*6.5%*
Earnings	6.0%	11.0%	*7.5%*
Dividends	2.0%	3.0%	*5.0%*
Book Value	3.5%	4.5%	*3.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	30.6	32.7	37.8	31.8	132.9
2017	30.1	33.0	36.2	31.5	130.8
2018	31.2	34.9	38.7	33.3	138.1
2019	30.7	*36.0*	*40.0*	*34.3*	*141*
2020	*32.0*	*37.0*	*42.0*	*35.0*	*146*

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	.29	.36	.54	.19	1.38
2017	.27	.33	.46	.32	1.38
2018	.27	.52	.74	.43	1.96
2019	.39	*.55*	*.76*	*.45*	*2.15*
2020	*.40*	*.57*	*.79*	*.49*	*2.25*

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.1925	.1925	.1925	.19875	.78
2016	.19875	.19875	.19875	.21125	.81
2017	.21125	.21125	.21125	.22375	.86
2018	.22375	.22375	.22375	.24	.91
2019	.24	.24			

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 61,000 retail customers, primarily in Middlesex County, New Jersey. In 2018, the Middlesex System accounted for 59% of operating revenues. At 12/31/18, the company had 330 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.5% of the com. stock; BlackRock Inst. Trust Co., 6.8% (4/19 proxy). Add.: 485 C Route 1 South, Suite 400, Iselin, NJ 08830. Tel.: 732-634-1500. Int.: www.middlesexwater.com.

Middlesex Water posted an impressive double-digit bottom-line advance in the March period. Indeed, share net jumped nearly 45% year over year, to $0.39, helped along by multiple drivers. First, operation and maintenance expense declined $1.7 million, year over year. Roughly $1.4 million in reductions is related to its revised long-term contract with the city of Perth Amboy whereby the company's subsidiary, USA-PA, is now relieved of subcontractor fees for wastewater services. The remaining $0.3 million in cost savings stemmed from improved weather conditions during the period. Additionally, Middlesex's income tax bill shrank due to regulatory changes.

We are adding a dime to our 2019 and 2020 earnings-per-share forecasts. We now look for net income of $2.15 a share this year and $2.25 a share in the next.

However, our top-line outlooks are moving in the opposite direction. While the abovementioned contract boosts profitability, lower revenues appear to be an adverse side effect. Consequently, we are shaving $2 million from our 2019 and 2020 revenue estimates, to $141 million and $146 million, respectively.

Capital spending is apt to persist over the long haul. Major infrastructure upgrades on its water delivery and filtration systems are on tap as we head into next decade. More than $100 million remains on the current allocation, with additional funding likely to follow. On balance, operating expenses should come down further, which may well lift share profits to $2.45 over the pull to 2022-2024.

But this issue holds little investment appeal at this juncture. Middlesex stock is slated to move in line with the year-ahead broader market averages. Meantime, upside over the 3- to -5 year stretch is limited, as MSEX shares are currently trading near fresh all-time highs. Traditionally, the water utility sector acts as a safe haven for conservative accounts during times of economic and market uncertainty. Thus, we think elevated market valuations and a see-saw political environment could be fueling interest here, along with the company's rising profitability. In sum, we suggest waiting for a better entry point.

Nicholas P. Patrikis *July 12, 2019*

(A) Diluted earnings. Next earnings report due early August.

(B) Dividends historically paid in mid-Feb., May, Aug., and November.■ Div'd reinvestment plan available.

(C) In millions.

Company's Financial Strength	B++
Stock's Price Stability	70
Price Growth Persistence	45
Earnings Predictability	80

YORK WATER NDQ-YORW

RECENT PRICE **35.34** | P/E RATIO **32.1** (Trailing: 33.3 Median: 25.0) | RELATIVE P/E RATIO **1.88** | DIV'D YLD **2.0%** | **VALUE LINE**

TIMELINESS 3 Raised 1/25/19
SAFETY 3 Lowered 7/17/15
TECHNICAL 1 Raised 7/5/19
BETA .75 (1.00 = Market)

2022-24 PROJECTIONS

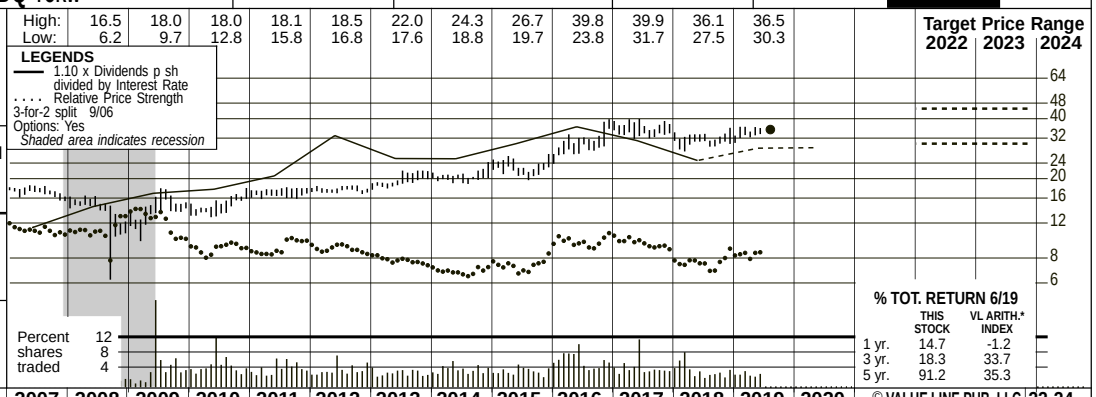
	Price	Gain	Ann'l Total Return
High	45	(+25%)	*9%*
Low	30	(-15%)	*-1%*

Insider Decisions

	S	O	N	D	J	F	M	A	M
to Buy	2	14	2	3	14	2	2	16	2
Options	0	0	0	0	0	0	0	0	16
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	3Q2018	4Q2018	1Q2019
to Buy	42	43	33
to Sell	36	41	40
Hld's(000)	4539	4765	4794



2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
2.17	2.18	2.58	2.56	2.79	2.89	2.95	3.07	3.18	3.21	3.27	3.58	3.68	3.70	3.77	3.74	***3.85***	***3.95***	Revenues per sh	***5.10***
.65	.65	.79	.77	.86	.88	.95	1.07	1.09	1.12	1.19	1.36	1.45	1.42	1.53	1.58	***1.70***	***1.80***	"Cash Flow" per sh	***2.50***
.47	.49	.56	.58	.57	.57	.64	.71	.71	.72	.75	.89	.97	.92	1.01	1.04	***1.10***	***1.20***	Earnings per sh A	***1.70***
.37	.39	.42	.45	.48	.49	.51	.52	.53	.54	.55	.57	.60	.63	.65	.67	***.70***	***.73***	Div'd Decl'd per sh B	***.95***
1.07	2.50	1.69	1.85	1.69	2.17	1.18	.83	.74	.94	.76	1.10	1.11	1.03	1.95	1.95	***2.00***	***2.00***	Cap'l Spending per sh	***1.85***
4.06	4.65	4.85	5.84	5.97	6.14	6.92	7.19	7.45	7.73	7.98	8.15	8.51	8.88	9.28	9.75	***10.40***	***11.25***	Book Value per sh	***12.10***
9.63	10.33	10.40	11.20	11.27	11.37	12.56	12.69	12.79	12.92	12.98	12.83	12.81	12.85	12.87	12.94	***13.00***	***12.90***	Common Shs Outst'g C	***12.80***
24.5	25.7	26.3	31.2	30.3	24.6	21.9	20.7	23.9	24.4	26.3	23.1	23.5	32.8	34.6	30.3	***Bold figures are Value Line estimates***		Avg Ann'l P/E Ratio	***22.5***
1.40	1.36	1.40	1.68	1.61	1.48	1.46	1.32	1.50	1.55	1.48	1.22	1.18	1.72	1.74	1.63			Relative P/E Ratio	***1.25***
3.2%	3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	3.5%	3.1%	3.1%	2.8%	2.8%	2.6%	2.1%	1.9%	2.1%			Avg Ann'l Div'd Yield	***2.5%***
37.0	39.0	40.6	41.4	42.4	45.9	47.1	47.6	48.6	48.4	***50.0***	***51.0***	Revenues ($mill)	***65.0***
7.5	8.9	9.1	9.3	9.7	11.5	12.5	11.8	13.0	13.4	***14.5***	***15.5***	Net Profit ($mill)	***21.5***
37.9%	38.5%	35.3%	37.6%	37.6%	29.8%	27.5%	31.3%	25.9%	15.7%	***21.0%***	***21.0%***	Income Tax Rate	***21.0%***
- -	1.2%	1.1%	1.1%	.8%	1.8%	1.6%	1.9%	6.7%	1.7%	***2.0%***	***1.5%***	AFUDC % to Net Profit	***1.5%***
45.7%	48.3%	47.1%	46.0%	45.1%	44.8%	44.4%	42.6%	43.0%	42.5%	***40.0%***	***37.0%***	Long-Term Debt Ratio	***34.0%***
54.3%	51.7%	52.9%	54.0%	54.9%	55.2%	55.6%	57.4%	57.0%	57.5%	***60.0%***	***63.0%***	Common Equity Ratio	***66.0%***
160.1	176.4	180.2	184.8	188.4	189.4	196.3	198.7	209.5	219.5	***225***	***230***	Total Capital ($mill)	***235***
222.0	228.4	233.0	240.3	244.2	253.2	261.4	270.9	288.8	299.2	***305***	***315***	Net Plant ($mill)	***325***
6.2%	6.5%	6.4%	6.4%	6.5%	7.4%	7.6%	7.2%	7.5%	7.3%	***7.5%***	***8.0%***	Return on Total Cap'l	***10.5%***
8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	10.9%	10.6%	***10.5%***	***10.5%***	Return on Shr. Equity	***14.0%***
8.6%	9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	10.9%	10.6%	***10.5%***	***10.5%***	Return on Com Equity	***14.0%***
1.9%	2.7%	2.5%	2.4%	2.4%	3.9%	4.4%	3.4%	4.0%	3.8%	***4.0%***	***4.0%***	Retained to Com Eq	***6.0%***
78%	72%	73%	74%	74%	64%	62%	67%	63%	64%	***63%***	***61%***	All Div'ds to Net Prof	***56%***

CAPITAL STRUCTURE as of 3/31/19
Total Debt $94.1 mill. **Due in 5 Yrs** $42.5 mill.
LT Debt $94.1 mill. **LT Interest** $5.5 mill.

(42% of Cap'l)

Pension Assets12/18 $40.6 mill.
Oblig. $41.5 mill.

Pfd Stock None

Common Stock 12,954,976 shs.

MARKET CAP: $450 million (Small Cap)

CURRENT POSITION ($MILL.)	2017	2018	3/31/19
Cash Assets	- -	- -	- -
Accounts Receivable	4.5	4.8	4.1
Inventory (Avg. Cost)	.9	.9	1.0
Other	3.2	3.3	3.6
Current Assets	8.6	9.0	8.7
Accts Payable	3.1	3.0	2.7
Debt Due	- -	1.0	- -
Other	6.0	6.8	7.7
Current Liab.	9.1	10.8	10.4

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	3.0%	3.0%	*5.5%*
"Cash Flow"	6.0%	6.0%	*9.0%*
Earnings	5.5%	6.5%	*9.5%*
Dividends	3.5%	4.0%	*6.5%*
Book Value	4.5%	4.0%	*4.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	11.3	11.8	12.6	11.9	47.6
2017	11.3	12.3	12.7	12.3	48.6
2018	11.6	12.0	12.7	12.1	48.4
2019	11.8	***12.5***	***13.2***	***12.5***	***50.0***
2020	***12.2***	***12.7***	***13.3***	***12.8***	***51.0***

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2016	.19	.23	.27	.23	.92
2017	.20	.23	.31	.27	1.01
2018	.20	.26	.29	.29	1.04
2019	.22	***.28***	***.30***	***.30***	***1.10***
2020	***.24***	***.31***	***.33***	***.32***	***1.20***

Calendar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.1495	.1495	.1495	.1555	.604
2016	.1555	.1555	.1555	.1602	.627
2017	.1602	.1602	.1602	.1666	.647
2018	.1666	.1666	.1666	.1733	.673
2019	.1733	.1733			

BUSINESS: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2018, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 199,000. Has more than 69,000 customers. Residential customers accounted for 65% of 2018 revenues; commercial and industrial (28%); other (7%). It also provides sewer billing services. Incorporated: PA. York had 109 full-time employees at 12/31/18. President/CEO: Jeffrey R. Hines. Officers/directors own 1.2% of the common stock (3/19 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water Company hit the ground running with its 2019 capital spending initiatives. During the March period, York invested $3.3 million for various infrastructure replacement and improvement projects. Through the remainder of the year, management expects to spend an additional $17.0 million, equating to total investment of about $20.3 million in 2019. The projected figure is a bit shy of its previous forecast ($21.5 million), but is still a notable increase over last year's spending bill ($16.9 million). Looking forward, the company's 2020 budget is likely to keep pace with the current year, as main extensions, general pipe and service line improvements, and the expansion of a wastewater treatment plant are at the top of York's to-do list. Indeed, these upgrades (costs can partially be passed along to customers via the Distribution System Improvement Charge) are vital to meet the needs of York's expanding customer base and ensure reliable service, long term.

Our profit outlook for this year and next is being modestly tempered. York Water posted first-quarter earnings of $0.22 a share, up two cents year over year, but slightly below our expectation. Higher operation and maintenance expenses partially offset benefits from lower income taxes during the period. In our view, operating costs are unlikely to subside over the intermediate term. Thus, we are shaving a nickel from our 2019 and 2020 share-earnings estimates, to $1.10 and $1.20, respectively. Meanwhile, we are leaving unaltered our top-line projections, as the recent rate hike (effective March 1, 2019), along with York's growing customer base, ought to nudge revenues higher as we head into next decade.

York stock does not warrant an investment at this juncture. Presently, the issue is trading firmly within our 3- to 5-year Target Price Range, as much of the gains we envision over this time frame appear to already be baked into the price. Over the coming six to 12 months, YORW is just an average selection for relative year-ahead price performance. Further, as a stand-alone income play, the 2.0% yield leaves much to be desired. All told, we think subscribers can find more-enticing options elsewhere at this time.

Nicholas P. Patrikis *July 12, 2019*

(A) Diluted earnings. Next earnings report due late August.
(B) Dividends historically paid in late February, June, September, and December.
(C) In millions, adjusted for split.

Company's Financial Strength	B+
Stock's Price Stability	60
Price Growth Persistence	55
Earnings Predictability	95

Blue Granite Water Company
Summary of Risk Premium Models for the
Proxy Group of Six Water Companies

	Proxy Group of Six Water Companies
Predictive Risk Premium Model (PRPM) (1)	10.97 %
Risk Premium Using an Adjusted Total Market Approach (2)	9.80 %
Average	10.39 %

Notes:
(1) From page 2 of this Schedule.
(2) From page 3 of this Schedule.

Blue Granite Water Company
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

Proxy Group of Six Water Companies	[1] LT Average Predicted Variance	[2] Spot Predicted Variance	[3] Recommended Variance (2)	[4] GARCH Coefficient	[5] Predicted Risk Premium (3)	[6] Risk-Free Rate (4)	[7] Indicated ROE (5)
American States Water Co.	0.38%	0.28%	0.33%	1.96484	8.00%	2.91%	10.91%
American Water Works Company Inc	NMF	NMF	NMF	6.41230	NMF	2.91%	NMF
Artesian Resources Corporation	0.33%	0.29%	0.31%	2.08636	8.01%	2.91%	10.92%
California Water Service Group	0.32%	0.26%	0.29%	2.03789	7.30%	2.91%	10.21%
Middlesex Water Co.	0.30%	0.26%	0.28%	2.16692	7.52%	2.91%	10.43%
York Water Co.	0.45%	0.31%	0.38%	2.06721	9.73%	2.91%	12.64%
						Average	11.02%
						Median	10.91%
						Average of Mean and Median	10.97%

NMF = Not Meaningful Figure

Notes:

(1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.

(2) Average of Columns [1] and [2].

(3) (1+(Column [3] * Column [4])^12) - 1.

(4) From note 2 on page 2 of Schedule DWD-5.

(5) Column [5] + Column [6].

Blue Granite Water Company
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Six Water Companies	
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	3.90	%
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	0.37	(2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	4.27	%
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.08	(3)
5.	Adjusted Prospective Bond Yield	4.35	%
6.	Equity Risk Premium (4)	5.45	
7.	Risk Premium Derived Common Equity Cost Rate	9.80	%

Notes:
(1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 10-11 of this Schedule).
(2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.37% from page 4 of this Schedule.
(3) Adjustment to reflect the A2 / A3 Moody's LT issuer rating of the Proxy Group of Six Water Companies as shown on page 5 of this Schedule. The 0.08% upward adjustment is derived by taking 1/6 of the spread between A2 and Baa2 Public Utility Bonds (1/6 * 0.47% = 0.08%) as derived from page 4 of this Schedule.
(4) From page 7 of this Schedule.

Blue Granite Water Company
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1] Aaa Rated Corporate Bond	[2] A Rated Public Utility Bond	[3] Baa Rated Public Utility Bond
Jul-2019	3.29 %	3.69 %	4.13 %
Jun-2019	3.42	3.82	4.31
May-2019	3.67	3.98	4.47
Average	3.46 %	3.83 %	4.30 %

Selected Bond Spreads

A Rated Public Utility Bonds Over Aaa Rated Corporate Bonds: 0.37 % (1)

Baa Rated Public Utility Bonds Over A Rated Public Utility Bonds: 0.47 % (2)

Notes:
(1) Column [2] - Column [1].
(2) Column [3] - Column [2].

Source of Information:
Bloomberg Professional Service

Blue Granite Water Company
Comparison of Long-Term Issuer Ratings for
Proxy Group of Six Water Companies

	Moody's Long-Term Issuer Rating July 2019		Standard & Poor's Long-Term Issuer Rating July 2019	
Proxy Group of Six Water Companies	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting(1)
American States Water Co. (2)	A2	6.0	A+	5.0
American Water Works Company Inc (3)	A3	7.0	A	6.0
Artesian Resources Corporation	NR	- -	NR	- -
California Water Service Group (4)	NR	- -	A+	5.0
Middlesex Water Co.	NR	- -	A	6.0
York Water Co.	NR	- -	A-	7.0
Average	A2 / A3	6.5	A	5.8

Notes:

(1) From page 6 of this Schedule.
(2) Ratings that of Golden State Water Company.
(3) Ratings that of New Jersey and Pennsylvania American Water Companies.
(4) Ratings that of California Water Service Company.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-
B1	14	B+
B2	15	B
B3	16	B-

Blue Granite Water Company
Judgment of Equity Risk Premium for
Proxy Group of Six Water Companies

Line No.		Proxy Group of Six Water Companies
1.	Calculated equity risk premium based on the total market using the beta approach (1)	5.91 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	4.98
3.	Average equity risk premium	5.45 %

Notes: (1) From page 8 of this Schedule.
(2) From page 12 of this Schedule.

Blue Granite Water Company
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Six Water Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Six Water Companies
	Ibbotson-Based Equity Risk Premiums:	
1.	Ibbotson Equity Risk Premium (1)	5.54 %
2.	Regression on Ibbotson Risk Premium Data (2)	8.35
3.	Ibbotson Equity Risk Premium based on PRPM (3)	9.05
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	9.73
5.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	10.62
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	10.48
7.	Conclusion of Equity Risk Premium	8.96 %
8.	Adjusted Beta (7)	0.66
9.	Forecasted Equity Risk Premium	5.91 %

Notes provided on page 9 of this Schedule.

Blue Granite Water Company
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Six Water Companies

Notes:

(1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2019 Market Report minus the arithmetic mean monthly yield of Moody's average Aaa and Aa corporate bonds from 1926-2018.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's average Aaa and Aa rated corporate bond yields from 1928-2018 referenced in Note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns and average Aaa and Aa corporate monthly bond yields, from January 1928 through July 2019.

(4) The equity risk premium based on the Value Line Summary and Index is derived by subtracting the average consensus forecast of Aaa corporate bonds of 3.90% (from page 3 of this Schedule) from the projected 3-5 year total annual market return of 13.63% (described fully in note 1 on page 2 of Schedule DWD-5).

(5) Using data from Value Line for the S&P 500, an expected total return of 14.52% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 3.90% results in an expected equity risk premium of 10.62%.

(6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 14.38% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 3.90% results in an expected equity risk premium of 10.48%.

(7) Average of mean and median beta from Schedule DWD-5.

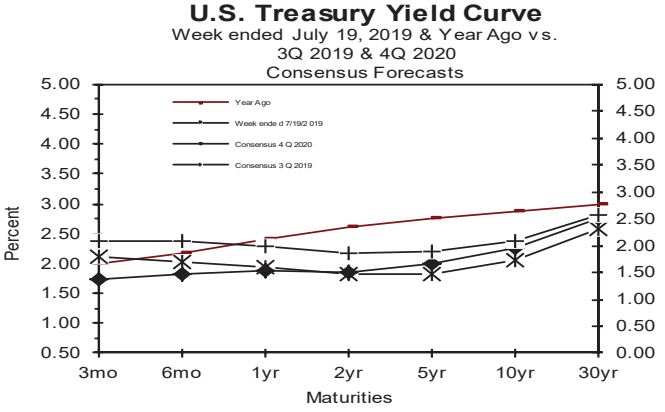
Sources of Information:

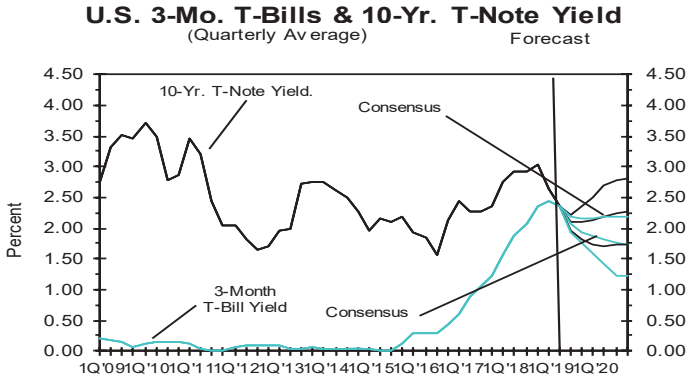
Stocks, Bonds, Bills, and Inflation - 2019 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, August 1, 2019 and June 1, 2019
Bloomberg Professional Service

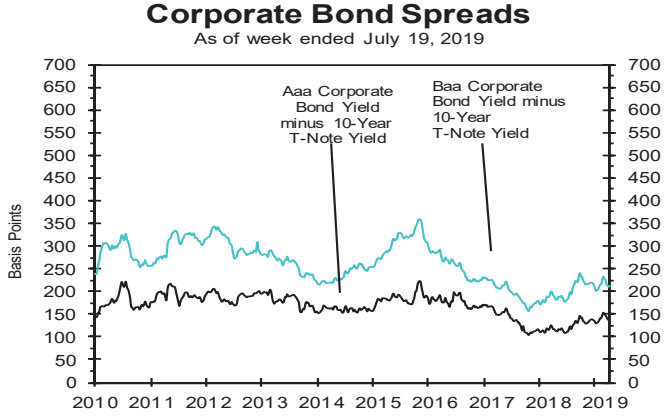
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

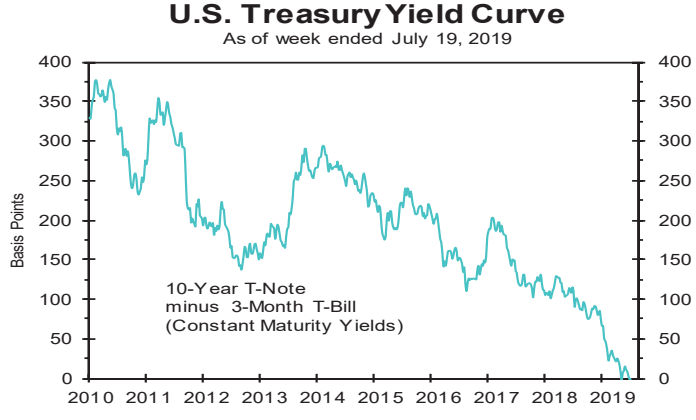
	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			*Latest Qtr*	3Q	4Q	1Q	2Q	3Q	4Q
Interest Rates	Jul 19	Jul 12	Jul 5	Jun 28	Jun	May	Apr	2Q 2019	2019	2019	2020	2020	2020	2020
Federal Funds Rate	2.39	2.41	2.40	2.38	2.38	2.39	2.42	2.40	2.2	2.0	1.9	1.8	1.8	1.8
Prime Rate	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.3	5.1	5.0	4.9	4.9	4.9
LIBOR, 3-mo.	2.29	2.33	2.31	2.32	2.40	2.53	2.59	2.51	2.3	2.2	2.1	2.1	2.0	2.0
Commercial Paper, 1-mo.	2.24	2.27	2.33	2.32	2.35	2.42	2.44	2.40	2.2	2.1	2.0	1.9	1.9	1.9
Treasury bill, 3-mo.	2.11	2.21	2.21	2.13	2.22	2.40	2.43	2.35	2.1	1.9	1.9	1.8	1.8	1.7
Treasury bill, 6-mo.	2.04	2.10	2.10	2.11	2.17	2.42	2.46	2.35	2.1	2.0	1.9	1.9	1.9	1.8
Treasury bill, 1 yr.	1.95	1.97	1.94	1.93	2.00	2.34	2.42	2.25	2.0	1.9	1.9	1.9	1.9	1.9
Treasury note, 2 yr.	1.82	1.86	1.80	1.74	1.81	2.21	2.34	2.12	1.8	1.8	1.8	1.8	1.9	1.9
Treasury note, 5 yr.	1.83	1.86	1.78	1.76	1.83	2.19	2.33	2.12	1.9	1.9	1.9	2.0	2.0	2.0
Treasury note, 10 yr.	2.07	2.09	2.00	2.02	2.07	2.40	2.53	2.33	2.1	2.1	2.1	2.2	2.2	2.3
Treasury note, 30 yr.	2.59	2.59	2.52	2.54	2.57	2.82	2.94	2.78	2.6	2.6	2.6	2.7	2.7	2.7
Corporate Aaa bond	3.46	3.46	3.40	3.46	3.56	3.79	3.87	3.74	3.4	3.5	3.6	3.7	3.8	3.8
Corporate Baa bond	4.19	4.19	4.13	4.19	4.33	4.53	4.61	4.49	4.4	4.5	4.6	4.7	4.8	4.8
State & Local bonds	3.23	3.25	3.27	3.27	3.29	3.38	3.49	3.39	3.3	3.3	3.3	3.4	3.4	3.5
Home mortgage rate	3.81	3.75	3.75	3.73	3.80	4.07	4.14	4.00	3.8	3.9	3.9	4.0	4.0	4.0
	History								Consensus Forecasts-Quarterly					
	3Q	4Q	1Q	2Q	3Q	4Q	*1Q*	*2Q*	3Q	4Q	1Q	2Q	3Q	4Q
Key Assumptions	2017	2017	2018	2018	2018	2018	*2019*	*2019*	2019	2019	2020	2020	2020	2020
Fed's AFE $ Index	105.5	106.2	102.9	105.5	107.8	109.4	109.4	110.2	109.2	109.2	108.2	108.0	107.7	107.4
Real GDP	3.2	3.5	2.5	3.5	2.9	1.1	3.1	2.1	1.9	1.9	1.8	1.8	1.8	1.9
GDP Price Index	2.4	2.6	2.3	3.2	2.0	1.6	1.1	2.4	2.0	2.0	2.0	2.1	2.1	2.0
Consumer Price Index	2.2	3.1	3.2	2.1	2.0	1.5	0.9	2.9	2.1	2.1	2.1	2.0	2.0	2.0

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).









Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2021 through 2025 and averages for the five-year periods 2021-2025 and 2026-2030. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

		Average For The Year					Five-Year Averages	
		2021	2022	2023	2024	2025	2021-2025	2026-2030
1. Federal Funds Rate	**CONSENSUS**	**2.4**	**2.4**	**2.6**	**2.7**	**2.8**	**2.6**	**2.8**
	Top 10 Average	3.1	3.2	3.4	3.4	3.4	3.3	3.4
	Bottom 10 Average	1.5	1.6	1.7	2.1	2.2	1.8	2.1
2. Prime Rate	**CONSENSUS**	**5.4**	**5.5**	**5.6**	**5.8**	**5.8**	**5.6**	**5.7**
	Top 10 Average	6.1	6.2	6.4	6.4	6.4	6.3	6.2
	Bottom 10 Average	4.6	4.7	4.8	5.1	5.3	4.9	5.1
3. LIBOR, 3-Mo.	**CONSENSUS**	**2.7**	**2.8**	**2.8**	**3.0**	**3.0**	**2.9**	**3.0**
	Top 10 Average	3.3	3.4	3.6	3.6	3.6	3.5	3.6
	Bottom 10 Average	2.1	2.1	2.0	2.4	2.5	2.2	2.5
4. Commercial Paper, 1-Mo.	**CONSENSUS**	**2.5**	**2.6**	**2.7**	**2.9**	**2.9**	**2.7**	**2.9**
	Top 10 Average	3.1	3.2	3.4	3.4	3.5	3.3	3.4
	Bottom 10 Average	2.0	2.0	2.0	2.4	2.4	2.2	2.4
5. Treasury Bill Yield, 3-Mo.	**CONSENSUS**	**2.4**	**2.4**	**2.5**	**2.7**	**2.8**	**2.6**	**2.8**
	Top 10 Average	3.1	3.2	3.4	3.4	3.4	3.3	3.4
	Bottom 10 Average	1.5	1.6	1.7	2.0	2.2	1.8	2.1
6. Treasury Bill Yield, 6-Mo.	**CONSENSUS**	**2.4**	**2.5**	**2.7**	**2.9**	**2.9**	**2.7**	**2.9**
	Top 10 Average	3.1	3.3	3.5	3.5	3.5	3.4	3.5
	Bottom 10 Average	1.7	1.7	1.8	2.2	2.4	2.0	2.3
7. Treasury Bill Yield, 1-Yr.	**CONSENSUS**	**2.5**	**2.6**	**2.8**	**3.0**	**3.0**	**2.8**	**3.0**
	Top 10 Average	3.3	3.4	3.6	3.6	3.7	3.5	3.7
	Bottom 10 Average	1.8	1.8	2.0	2.3	2.4	2.0	2.3
8. Treasury Note Yield, 2-Yr.	**CONSENSUS**	**2.6**	**2.7**	**2.9**	**3.0**	**3.1**	**2.9**	**3.1**
	Top 10 Average	3.3	3.5	3.7	3.8	3.8	3.6	3.8
	Bottom 10 Average	1.8	1.9	2.0	2.3	2.4	2.1	2.3
10. Treasury Note Yield, 5-Yr.	**CONSENSUS**	**2.8**	**2.9**	**3.1**	**3.2**	**3.3**	**3.0**	**3.3**
	Top 10 Average	3.5	3.7	4.0	4.0	4.0	3.8	4.1
	Bottom 10 Average	2.0	2.1	2.2	2.3	2.5	2.2	2.4
11. Treasury Note Yield, 10-Yr.	**CONSENSUS**	**3.0**	**3.1**	**3.3**	**3.3**	**3.4**	**3.2**	**3.4**
	Top 10 Average	3.6	3.9	4.2	4.2	4.2	4.0	4.4
	Bottom 10 Average	2.3	2.4	2.4	2.5	2.6	2.4	2.6
12. Treasury Bond Yield, 30-Yr.	**CONSENSUS**	**3.3**	**3.5**	**3.6**	**3.7**	**3.8**	**3.6**	**3.8**
	Top 10 Average	4.0	4.3	4.5	4.6	4.6	4.4	4.8
	Bottom 10 Average	2.7	2.7	2.8	2.9	2.9	2.8	2.9
13. Corporate Aaa Bond Yield	**CONSENSUS**	**4.4**	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.8**
	Top 10 Average	5.0	5.2	5.5	5.5	5.5	5.3	5.6
	Bottom 10 Average	3.8	3.9	3.9	4.0	4.0	3.9	4.0
13. Corporate Baa Bond Yield	**CONSENSUS**	**5.3**	**5.6**	**5.7**	**5.7**	**5.7**	**5.6**	**5.8**
	Top 10 Average	6.0	6.3	6.6	6.6	6.7	6.5	6.8
	Bottom 10 Average	4.7	4.8	4.7	4.8	4.8	4.7	4.8
14. State & Local Bonds Yield	**CONSENSUS**	**4.1**	**4.2**	**4.3**	**4.3**	**4.3**	**4.2**	**4.4**
	Top 10 Average	4.6	4.9	5.0	5.0	5.0	4.9	5.1
	Bottom 10 Average	3.5	3.6	3.6	3.6	3.6	3.6	3.6
15. Home Mortgage Rate	**CONSENSUS**	**4.7**	**4.8**	**4.9**	**5.0**	**5.0**	**4.9**	**5.0**
	Top 10 Average	5.3	5.5	5.8	5.8	5.8	5.6	5.9
	Bottom 10 Average	4.0	4.0	4.0	4.2	4.2	4.1	4.2
A. Fed's AFE Nominal $ Index	**CONSENSUS**	**108.5**	**108.2**	**108.0**	**107.6**	**106.9**	**107.8**	**106.7**
	Top 10 Average	110.8	110.5	110.9	110.8	110.6	110.7	111.2
	Bottom 10 Average	106.6	105.8	104.9	104.6	103.6	105.1	102.9
		Year-Over-Year, % Change					Five-Year Averages	
		2021	2022	2023	2024	2025	2021-2025	2026-2030
B. Real GDP	**CONSENSUS**	**1.9**	**1.9**	**2.0**	**2.1**	**2.1**	**2.0**	**2.1**
	Top 10 Average	2.3	2.4	2.4	2.5	2.5	2.4	2.6
	Bottom 10 Average	1.5	1.4	1.6	1.8	1.8	1.6	1.8
C. GDP Chained Price Index	**CONSENSUS**	**2.1**	**2.1**	**2.0**	**2.0**	**2.0**	**2.1**	**2.0**
	Top 10 Average	2.4	2.4	2.2	2.2	2.2	2.3	2.2
	Bottom 10 Average	1.8	1.8	1.8	1.9	1.9	1.9	1.8
D. Consumer Price Index	**CONSENSUS**	**2.1**	**2.2**	**2.2**	**2.1**	**2.1**	**2.1**	**2.1**
	Top 10 Average	2.5	2.4	2.4	2.4	2.4	2.4	2.4
	Bottom 10 Average	1.7	1.8	1.9	1.9	1.9	1.8	1.8

Blue Granite Water Company
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

Line No.		Implied Equity Risk Premium
	Equity Risk Premium based on S&P Utility Index Holding Period Returns (1):	
1.	Historical Equity Risk Premium	4.00 %
2.	Regression of Historical Equity Risk Premium (2)	6.04
3.	Forecasted Equity Risk Premium Based on PRPM (3)	3.77
4.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Value Line Data) (4)	6.24
5.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Bloomberg Data) (5)	4.83
6.	Average Equity Risk Premium (6)	4.98 %

Notes:
(1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2018. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A rated public utility bond yields from 1928 - 2018 referenced in note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A rated public utility bonds from January 1928 - July 2019.

(4) Using data from Value Line for the S&P Utilities Index, an expected return of 10.51% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 4.27%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 6.24%. (10.51% - 4.27% = 6.24%)

(5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 9.10% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 4.27%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 4.83%. (9.10% - 4.27% = 4.83%)

(6) Average of lines 1 through 5.

Blue Granite Water Company
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

Proxy Group of Six Water Companies	[1] Value Line Adjusted Beta	[2] Bloomberg Adjusted Beta	[3] Average Beta	[4] Market Risk Premium (1)	[5] Risk-Free Rate (2)	[6] Traditional CAPM Cost Rate	[7] ECAPM Cost Rate	[8] Indicated Common Equity Cost Rate (3)
American States Water Co.	0.70	0.55	0.63	10.03 %	2.91 %	9.23 %	10.16 %	9.69 %
American Water Works Company Inc	0.60	0.59	0.60	10.03	2.91	8.93	9.93	9.43
Artesian Resources Corporation	0.65	0.58	0.62	10.03	2.91	9.13	10.08	9.61
California Water Service Group	0.70	0.64	0.67	10.03	2.91	9.63	10.46	10.05
Middlesex Water Co.	0.75	0.70	0.73	10.03	2.91	10.23	10.91	10.57
York Water Co.	0.75	0.64	0.70	10.03	2.91	9.93	10.68	10.31
Mean			0.66			9.51 %	10.37 %	9.94 %
Median			0.65			9.43 %	10.31 %	9.87 %
Average of Mean and Median			0.66			9.47	10.34	9.91 %

Notes on page 2 of this Schedule.

Blue Granite Water Company
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

(1) The market risk premium (MRP) is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Historical Data MRP Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2018)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2018:	11.89	%
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.12	
MRP based on Ibbotson Historical Data:	6.77	%

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data
(1926-2018) 9.42 %

Measure 3: Application of the PRPM to Ibbotson Historical Data:
(January 1926 - July 2019) 10.20 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending August 02, 2019)

Total projected return on the market 3-5 years hence*:	13.63	%
Projected Risk-Free Rate (see note 2):	2.91	
MRP based on Value Line Summary & Index:	10.72	%

*Forcasted 3-5 year capital appreciation plus expected dividend yield

Measure 5: Value Line Projected Return on the Market based on the S&P 500

Total return on the Market based on the S&P 500:	14.52	%
Projected Risk-Free Rate (see note 2):	2.91	
MRP based on Value Line data	11.61	%

Measure 6: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	14.38	%
Projected Risk-Free Rate (see note 2):	2.91	
MRP based on Bloomberg data	11.47	%
Average of Value Line, Ibbotson, and Bloomberg MRP:	10.03	%

(2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 10-11 of Schedule DWD-4.) The projection of the risk-free rate is illustrated below:

Third Quarter 2019	2.60	%
Fourth Quarter 2019	2.60	
First Quarter 2020	2.60	
Second Quarter 2020	2.70	
Third Quarter 2020	2.70	
Fourth Quarter 2020	2.70	
2021-2025	3.60	
2026-2030	3.80	
	2.91	%

(3) Average of Column 6 and Column 7.

Sources of Information:
Value Line Summary and Index
Blue Chip Financial Forecasts, August 1, 2019 and June 1, 2019
Stocks, Bonds, Bills, and Inflation - 2019 SBBI Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

Blue Granite Water Company
Basis of Selection of the Group of Non-Price Regulated Companies
Comparable in Total Risk to the Utility Proxy Group

The criteria for selection of the Non-Price Regulated Proxy Group was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group was then selected based on the unadjusted beta range of 0.26 – 0.70 and residual standard error of the regression range of 2.7407 – 3.2687 of the Utility Proxy Group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the Utility Proxy Group's residual standard error of the regression is 0.1320. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1320 = \frac{3.0047}{\sqrt{518}} = \frac{3.0047}{22.7596}$$

Source of Information: Value Line, Inc., June 2019
Value Line Investment Survey (Standard Edition)

Blue Granite Water Company
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

Proxy Group of Six Water Companies	[1] Value Line Adjusted Beta	[2] Unadjusted Beta	[3] Residual Standard Error of the Regression	[4] Standard Deviation of Beta
American States Water Co.	0.70	0.48	2.7300	0.0984
American Water Works Company Inc	0.60	0.36	2.1647	0.0780
Artesian Resources Corporation	0.65	0.41	3.4190	0.1232
California Water Service Group	0.70	0.49	2.9531	0.1064
Middlesex Water Co.	0.75	0.56	3.2871	0.1185
York Water Co.	0.75	0.58	3.4742	0.1252
Average	0.69	0.48	3.0047	0.1083
Beta Range (+/- 2 std. Devs. of Beta)	0.26	0.70		
2 std. Devs. of Beta	0.22			
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	2.7407	3.2687		
Std. dev. of the Res. Std. Err.	0.1320			
2 std. devs. of the Res. Std. Err.	0.2640			

Source of Information: Valueline Proprietary Database, June 2019

Blue Granite Water Company
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Six Water Companies

Proxy Group of Fourteen Non-Price Regulated Companies	[1] VL Adjusted Beta	[2] Unadjusted Beta	[3] Residual Standard Error of the Regression	[4] Standard Deviation of Beta
AutoZone Inc.	0.75	0.62	2.8572	0.1030
Cheesecake Factory	0.70	0.54	2.8398	0.1023
Casey's Gen'l Stores	0.75	0.57	3.0277	0.1091
Cboe Global Markets	0.70	0.52	2.7792	0.1001
Cracker Barrel	0.70	0.53	3.0130	0.1086
Campbell Soup	0.65	0.46	2.8442	0.1025
Dollar General	0.80	0.66	3.0238	0.1090
Dunkin' Brands Group	0.65	0.46	2.8236	0.1018
Darden Restaurants	0.80	0.64	2.9600	0.1067
Integra LifeSciences	0.80	0.66	3.1779	0.1145
Jack in the Box	0.80	0.67	3.2293	0.1164
Philip Morris Int'l	0.85	0.70	2.7477	0.0990
Texas Roadhouse	0.85	0.70	3.0559	0.1101
Viad Corp.	0.80	0.68	3.0745	0.1108
Average	0.76	0.60	2.9600	0.1100
Proxy Group of Six Water Companies	0.69	0.48	3.0047	0.1083

Source of Information: Valueline Proprietary Database, June 2019

Blue Granite Water Company
Summary of Cost of Equity Models Applied to
Proxy Group of Fourteen Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Six Water Companies

Principal Methods	Proxy Group of Fourteen Non-Price Regulated Companies
Discounted Cash Flow Model (DCF) (1)	12.14 %
Risk Premium Model (RPM) (2)	11.60
Capital Asset Pricing Model (CAPM) (3)	10.84
Mean	11.53 %
Median	11.60 %
Average of Mean and Median	11.57 %

Notes:
(1) From page 2 of this Schedule.
(2) From page 3 of this Schedule.
(3) From page 6 of this Schedule.

Blue Granite Water Company
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Six Water Companies

Proxy Group of Fourteen Non-Price Regulated Companies	[1] Average Dividend Yield	[2] Value Line Projected Five Year Growth in EPS	[3] Reuters Mean Consensus Projected Five Year Growth Rate in EPS	[4] Zack's Five Year Projected Growth Rate in EPS	[5] Yahoo! Finance Projected Five Year Growth in EPS	[6] Average Projected Five Year Growth Rate in EPS	[7] Adjusted Dividend Yield	[8] Indicated Common Equity Cost Rate (1)
AutoZone Inc.	- %	13.50 %	11.80 %	12.20 %	11.80 %	12.33 %	- %	NA %
Cheesecake Factory	3.21	7.50	11.45	13.00	11.45	10.85	3.38	14.23
Casey's Gen'l Stores	0.87	5.50	7.95	9.40	7.95	7.70	0.90	8.60
Cboe Global Markets	1.33	14.50	2.09	9.00	2.08	6.92	1.38	8.30
Cracker Barrel	3.08	10.00	(0.40)	10.00	(0.40)	10.00	3.23	13.23
Campbell Soup	3.48	1.00	(3.27)	5.00	(3.27)	3.00	3.53	6.53
Dollar General	0.97	12.00	9.84	10.90	9.84	10.65	1.02	11.67
Dunkin' Brands Group	1.91	10.00	7.45	10.80	7.45	8.93	2.00	10.93
Darden Restaurants	2.90	12.00	10.53	10.10	10.53	10.79	3.06	13.85
Integra LifeSciences	-	22.00	12.07	11.70	12.07	14.46	-	NA
Jack in the Box	1.99	9.50	12.47	13.00	12.47	11.86	2.11	13.97
Philip Morris Int'l	5.59	6.00	5.71	7.90	5.71	6.33	5.77	12.10
Texas Roadhouse	2.22	13.50	9.80	11.30	9.15	10.94	2.34	13.28
Viad Corp.	0.61	11.00	NA	NA	14.00	12.50	0.65	13.15
							Mean	11.65 %
							Median	12.63 %
							Average of Mean and Median	12.14 %

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regluated comparable risk companies is identical to the application of the DCF to the utility proxy group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of July 31, 2019. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, www.reuters.com, www.zacks.com, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information:
Value Line Investment Survey
www.reuters.com Downloaded on 07/31/2019
www.zacks.com Downloaded on 07/31/2019
www.yahoo.com Downloaded on 07/31/2019

Blue Granite Water Company
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Fourteen Non-Price Regulated Companies
1.	Prospective Yield on Baa Rated Corporate Bonds (1)	4.90 %
2.	Adjustment to Reflect Bond rating Difference of Non-Price Regulated Companies (2)	(0.20)
3.	Adjusted Prospective Bond Yield	4.70
4.	Equity Risk Premium (3)	6.90
4.	Risk Premium Derived Common Equity Cost Rate	11.60 %

Notes: (1) Average forecast of Baa corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated August 1, 2019 and June 1, 2019 (see pages 10 and 11 of Schedule DWD-4). The estimates are detailed below.

Third Quarter 2019	4.40 %
Fourth Quarter 2019	4.50
First Quarter 2020	4.60
Second Quarter 2020	4.70
Third Quarter 2020	4.80
Fourth Quarter 2020	4.80
2021-2025	5.60
2026-2030	5.80
Average	4.90 %

(2) To reflect the Baa1 average rating of the non-utility proxy group, the prospective yield on Baa corporate bonds must be adjusted downward by 1/3 of the spread between A and Baa corporate bond yields as shown below:

	A Corp. Bond Yield	Baa Corp. Bond Yield	Spread
Jul-2019	3.70 %	4.28 %	0.58 %
Jun-2019	3.83	4.46	0.63
May-2019	4.01	4.63	0.62
		Average yield spread	0.61 %
		1/3 of spread	0.20 %

(3) From page 5 of this Schedule.

Blue Granite Water Company
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Fourteen Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Six Water Companies

	Moody's Long-Term Issuer Rating July 2019		Standard & Poor's Long-Term Issuer Rating July 2019	
Proxy Group of Fourteen Non-Price Regulated Companies	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting (1)
AutoZone Inc.	Baa1	8.0	BBB	9.0
Cheesecake Factory	NR	--	NR	--
Casey's Gen'l Stores	NR	--	NR	--
Cboe Global Markets	A3	7.0	A-	7.0
Cracker Barrel	WR	--	NR	--
Campbell Soup	Baa2	9.0	BBB-	10.0
Dollar General	Baa2	9.0	BBB	9.0
Dunkin' Brands Group	NR	--	NR	--
Darden Restaurants	Baa2	9.0	BBB	9.0
Integra LifeSciences	NR	--	NR	--
Jack in the Box	WR	--	NR	--
Philip Morris Int'l	A2	6.0	A	6.0
Texas Roadhouse	NR	--	NR	--
Viad Corp.	WR	--	NR	--
Average	Baa1	8.0	BBB+	8.3

Notes:
(1) From page 6 of Schedule DWD-4.

Source of Information:
Bloomberg Professional Services

Blue Granite Water Company
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Fourteen Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Six Water Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Fourteen Non-Price Regulated Companies
	Ibbotson-Based Equity Risk Premiums:	
1.	Ibbotson Equity Risk Premium (1)	5.54 %
2.	Regression on Ibbotson Risk Premium Data (2)	8.35
3.	Ibbotson Equity Risk Premium based on PRPM (3)	9.05
5.	Equity Risk Premium Based on Value Line Summary and Index (4)	9.73
6.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	10.62
8.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	10.48
9.	Conclusion of Equity Risk Premium	8.96 %
10.	Adjusted Beta (7)	0.77
11.	Forecasted Equity Risk Premium	6.90 %

Notes:
(1) From note 1 of page 9 of Schedule DWD-4.
(2) From note 2 of page 9 of Schedule DWD-4.
(3) From note 3 of page 9 of Schedule DWD-4.
(4) From note 4 of page 9 of Schedule DWD-4.
(5) From note 5 of page 9 of Schedule DWD-4.
(6) From note 6 of page 9 of Schedule DWD-4.
(7) Average of mean and median beta from page 6 of this Schedule.

Sources of Information:
Stocks, Bonds, Bills, and Inflation - 2019 SBBI Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, August 1, 2019 and June 1, 2019
Bloomberg Professional Services

Blue Granite Water Company
Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Six Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Fourteen Non-Price Regulated Companies	Value Line Adjusted Beta	Bloomberg Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
AutoZone Inc.	0.75	0.66	0.70	10.03 %	2.91 %	9.93 %	10.68 %	10.31 %
Cheesecake Factory	0.70	0.74	0.72	10.03	2.91	10.13	10.84	10.48
Casey's Gen'l Stores	0.75	0.79	0.77	10.03	2.91	10.63	11.21	10.92
Cboe Global Markets	0.70	0.78	0.74	10.03	2.91	10.33	10.99	10.66
Cracker Barrel	0.70	0.73	0.72	10.03	2.91	10.13	10.84	10.48
Campbell Soup	0.65	0.60	0.63	10.03	2.91	9.23	10.16	9.69
Dollar General	0.80	0.72	0.76	10.03	2.91	10.53	11.14	10.84
Dunkin' Brands Group	0.65	0.85	0.75	10.03	2.91	10.43	11.06	10.75
Darden Restaurants	0.80	0.79	0.79	10.03	2.91	10.84	11.36	11.10
Integra LifeSciences	0.80	0.90	0.85	10.03	2.91	11.44	11.81	11.63
Jack in the Box	0.80	0.67	0.73	10.03	2.91	10.23	10.91	10.57
Philip Morris Int'l	0.85	0.94	0.90	10.03	2.91	11.94	12.19	12.06
Texas Roadhouse	0.85	0.82	0.84	10.03	2.91	11.34	11.74	11.54
Viad Corp.	0.80	0.83	0.81	10.03	2.91	11.04	11.51	11.27
Mean			0.77			10.58 %	11.17 %	10.88 %
Median			0.76			10.48 %	11.10 %	10.80 %
Average of Mean and Median			0.77			10.53 %	11.14 %	10.84 %

Notes:
(1) From Schedule DWD-5, note 1.
(2) From Schedule DWD-5, note 2.
(3) Average of CAPM and ECAPM cost rates.

Blue Granite Water Company
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		[1] Market Capitalization on April 30, 2019 (1) (millions)		[2] Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	[3] Applicable Size Premium (3)	[4] Spread from Applicable Size Premium (4)
1.	Blue Granite Water Company	$ 59.825		10	5.22%	
2.	Proxy Group of Six Water Companies	$ 4,663.072	77.9 x	4	0.85%	4.37%

	[A] Decile	[B] Market Capitalization of Smallest Company (millions)	[C] Market Capitalization of Largest Company (millions)	[D] Size Premium (Return in Excess of CAPM)*
Largest	1	$ 29,428.909	$ 1,073,390.566	-0.30%
	2	13,512.960	29,022.867	0.52%
	3	7,275.967	13,455.802	0.81%
	4	4,504.066	7,524.230	0.85%
	5	2,996.003	4,503.549	1.28%
	6	1,961.831	2,992.251	1.50%
	7	1,292.791	1,960.201	1.58%
	8	730.047	1,292.224	1.80%
	9	325.360	727.843	2.46%
Smallest	10	2.455	321.578	5.22%

*From 2019 Duff & Phelps Cost of Capital Navigator

Notes:

(1) From page 2 of this Schedule.

(2) Gleaned from Columns [B] and [C] on the bottom of this page. The appropriate decile (Column [A]) corresponds to the market capitalization of the proxy group, which is found in Column [1].

(3) Corresponding risk premium to the decile is provided in Column [D] on the bottom of this page.

(4) Line No. 1 Column [3] – Line No. 2 Column [3]. For example, the 4.37% in Column [4], Line No. 2 is derived as follows 4.37% = 5.22% - 0.85%.

Blue Granite Water Company
Market Capitalization of Blue Granite Water Company and the
Proxy Group of Six Water Companies

Company	Exchange	[1] Common Stock Shares Outstanding at Fiscal Year End 2018 (millions)	[2] Book Value per Share at Fiscal Year End 2018 (1)	[3] Total Common Equity at Fiscal Year End 2018 (millions)	[4] Closing Stock Market Price on July 31, 2019	[5] Market-to-Book Ratio on July 31, 2019 (2)	[6] Market Capitalization on July 31, 2019 (3) (millions)
Blue Granite Water Company		NA	NA	16.208 (4)	NA		
Based upon Proxy Group of Six Water Companies						369.1 (5)	$ 59.825 (6)
Proxy Group of Six Water Companies							
American States Water Co.	NYSE	36.758	$ 15.187	$ 558.223	$ 77.470	510.1 %	$ 2,847.630
American Water Works Company Inc	NYSE	180.684	32.454	5,864.000	114.780	353.7	20,738.910
Artesian Resources Corporation	NYSE	9.250	16.568	153.251	35.980	217.2	332.815
California Water Service Group	NYSE	48.065	15.191	730.157	53.390	351.5	2,566.175
Middlesex Water Co.	NYSE	16.403	15.167	248.787	62.630	412.9	1,027.320
York Water Co.	NYSE	12.944	9.750	126.195	35.970	368.9	465.579
Average		50.684	$ 17.386	$ 1,280.102	$ 63.370	369.1 %	$ 4,663.072

NA= Not Available

Notes: (1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 1 * Column 4.
(4) Total book equity multiplied by requested equity ratio.
(5) The market-to-book ratio of Blue Granite Water Company on July 31, 2019 is assumed to be equal to the market-to-book ratio of Proxy Group of Six Water Companies on July 31, 2019 as appropriate.
(6) Column [3] multiplied by Column [5].

Source of Information: 2018 Annual Forms 10K
yahoo.finance.com

Blue Granite Water Company
Portfolio Ranks by Size and Risk Premiums over CAPM Results
as Compiled by Duff and Phelps 2019 Guide to Cost of Capital

Portfolio Rank by Size	B-1 Market Val. of Equity (in $millions)	Smoothed Premium over CAPM	B-2 Average Book Val. (in $millions)	Smoothed Premium over CAPM	B-4 Market Value of Invested Capital (in $millions)	Smoothed Premium over CAPM	B-5 Total Assets (in $millions)	Smoothed Premium over CAPM	B-7 Sales (in $millions)	Smoothed Premium over CAPM	B-8 Average Number of Employees	Smoothed Premium over CAPM
1	$183,530 and Up	-1.58%	$39,064 and Up	0.70%	$218,547 and Up	-0.91%	$118,454 and Up	0.42%	$83,836 and Up	0.66%	224,700 and Up	0.32%
2	$58,770 - $183,530	-0.17%	$14,329 - $39,064	1.38%	$76,098- $218,547	0.17%	$49,025 - $118,454	1.13%	$30,694 - $83,836	1.41%	87,395 - 224,700	1.17%
3	$36,102 - $58,770	0.39%	$9,398 - $14,329	1.63%	$46,827 - $76,098	0.65%	$32,779 - $49,025	1.40%	$18,880 - $30,694	1.81%	58,282 - 87,395	1.52%
4	$25,511 - $36,102	0.79%	$6,536 - $9,398	1.83%	$33,869 - $46,827	0.97%	$22,606 - $32,779	1.65%	$14,299 - $18,880	1.99%	44,136 - 58,282	1.75%
5	$19,083 - $25,511	1.08%	$4,972 - $6,536	2.02%	$25,989 - $33,869	1.19%	$16,793 - $22,606	1.87%	$11,160 - $14,299	2.17%	34,651 - 44,136	1.92%
6	$14,850 - $19,083	1.39%	$4,216 - $4,972	2.12%	$20,123 - $25,989	1.43%	$13,244 - $16,793	2.02%	$9,136 - $11,160	2.31%	27,046 - 34,651	2.10%
7	$12,298 - $14,850	1.58%	$3,539 - $4,216	2.20%	$16,237 - $20,123	1.62%	$10,530 - $13,244	2.18%	$7,727 - $9,136	2.43%	21,476 - 27,046	2.29%
8	$10,226 - $12,298	1.78%	$2,887 - $3,539	2.32%	$13,373 - $16,237	1.80%	$8,750 - $10,530	2.31%	$6,699 - $7,727	2.52%	17,789 - 21,476	2.44%
9	$8,627 - $10,226	1.96%	$2,403 - $2,887	2.42%	$11,285 - $13,373	1.96%	$7,383 - $8,750	2.42%	$5,696 - $6,699	2.61%	15,100 - 17,789	2.57%
10	$7,351 - $8,627	2.12%	$2,055 - $2,403	2.52%	$9,706 - $11,285	2.09%	$6,290 - $7,383	2.53%	$4,671 - $5,696	2.73%	13,149 - 15,100	2.68%
11	$6,241 - $7,351	2.29%	$1,799 - $2,055	2.59%	$8,264 - $9,706	2.21%	$5,360 - $6,290	2.62%	$3,861 - $4,671	2.87%	11,535 - 13,149	2.77%
12	$5,361 - $6,241	2.46%	$1,588 - $1,799	2.66%	$6,974 - $8,264	2.37%	$4,546 - $5,360	2.73%	$3,312 - $3,861	2.97%	10,137 - 11,535	2.87%
13	$4,586 - $5,361	2.60%	$1,400 - $1,588	2.73%	$6,030 - $6,974	2.50%	$3,885 - $4,546	2.83%	$2,867 - $3,312	3.07%	8,921 - 10,137	2.96%
14	$3,853 - $4,586	2.79%	$1,230 - $1,400	2.80%	$5,227 - $6,030	2.61%	$3,273 - $3,885	2.93%	$2,506 - $2,867	3.16%	7,763 - 8,921	3.06%
15	$3,319 - $3,853	2.95%	$1,069 - $1,230	2.87%	$4,488 - $5,227	2.75%	$2,780 - $3,273	3.05%	$2,209 - $2,506	3.24%	6,656 - 7,763	3.16%
16	$2,915 - $3,319	3.09%	$930 - $1,069	2.95%	$3,887 - $4,488	2.87%	$2,423 - $2,780	3.14%	$1,944 - $2,209	3.32%	5,574 - 6,656	3.29%
17	$2,530 - $2,915	3.22%	$811 - $930	3.02%	$3,305 - $3,887	3.00%	$2,092 - $2,423	3.23%	$1,723 - $1,944	3.41%	4,653 - 5,574	3.42%
18	$2,120 - $2,530	3.38%	$686 - $811	3.10%	$2,707 - $3,305	3.16%	$1,750 - $2,092	3.33%	$1,526 - $1,723	3.48%	3,852 - 4,653	3.56%
19	$1,713 - $2,120	3.59%	$574 - $686	3.20%	$2,178 - $2,707	3.35%	$1,441 - $1,750	3.46%	$1,278 - $1,526	3.56%	3,145 - 3,852	3.70%
20	$1,379 - $1,713	3.82%	$483 - $574	3.30%	$1,794 - $2,178	3.53%	$1,184 - $1,441	3.58%	$1,007 - $1,278	3.71%	2,529 - 3,145	3.86%
21	$1,112 - $1,379	4.03%	$404 - $483	3.39%	$1,453 - $1,794	3.68%	$934 - $1,184	3.72%	$797 - $1,007	3.87%	1,986 - 2,529	4.02%
22	$867 - $1,112	4.27%	$331 - $404	3.49%	$1,118 - $1,453	3.90%	$708 - $934	3.89%	$626 - $797	4.01%	1,495 - 1,986	4.21%
23	$633 - $867	4.54%	$256 - $331	3.61%	$807 - $1,118	4.13%	$512 - $708	4.07%	$460 - $626	4.19%	1,079 - 1,495	4.45%
24	$334 - $633	4.94%	$150 - $256	3.78%	$416 - $807	4.48%	$287 - $512	4.31%	$247 - $460	4.42%	595 - 1,079	4.69%
25	Up to $334	6.15%	Up to $150	4.31%	Up to $416	5.54%	Up to $287	4.94%	Up to $247	5.17%	Up to 595	5.53%

	B-1 Value	Portfolio Ranking	B-2 Value	Portfolio Ranking	B-4 Value	Portfolio Ranking	B-5 Value	Portfolio Ranking	B-7 Value	Portfolio Ranking	B-8 Value	Portfolio Ranking
Proxy Group of Six Water Companies	$ 4,663	13	$ 1,280	14	$ 6,256	13	$ 4,534	13	$ 807	21	1,430	23
Blue Granite Water Company	$ 59.82	25	$ 31.76	25	$ 59.82	25	$ 79.27	25	$ 21.72	25	48	25
Indicated Risk Premium	3.55%		1.51%		3.04%		2.11%		1.30%		1.08%	

Sources of Information:
Duff & Phelps 2019 Cost of Capital Navigator
SNL Financial
Company Form 10-K

D'Ascendis Direct Exhibit No. 1
Schedule DWD-8
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